LABOR, MANAGEMENT AND PRODUCTION

The Annals

VOLUME XCI SEPTEMBER, 1920

EDITOR: CLYDE L. KING
ASSISTANT EDITOR: J. H. WILLITS
EDITORIAL COUNCIL: THOMAS CONWAY, JR., C. H. CRENNAN, A. A. GIESECKE, A. R. HATTON, AMOS S. HERSHEY. E. M. HOPKINS, S. S. HUEBNER, CARL KELSEY, J. P. LICHTENBERGER, ROSWELL C. McCREA, E. M. PATTERSON, L. S. ROWE, HENRY SUZZALO, T. W. VAN METRE, F. D. WATSON

This volume is edited by

MORRIS LLEWELLYN COOKE

SAMUEL GOMPERS
President, American Federation of Labor

FRED J. MILLER
President, American Society of Mechanical Engineers

THE AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE
39TH STREET AND WOODLAND AVENUE
PHILADELPHIA
1920

Copyright, 1920, by
THE AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE
All rights reserved

EUROPEAN AGENTS

ENGLAND: P. S. King & Son, Ltd., 2 Great Smith St., Westminster, London, S. W.
FRANCE: L. Larose, Rue Soufflot, 22, Paris.
GERMANY: Mayer & Müller, 2 Prinz Louis Ferdinandstrasse, Berlin, N. W.
ITALY: Giornale Degli Economisti, via Monte Savello, Palazzo Orsini, Rome.
SPAIN: E. Dossat, 9 Plaza de Santa Ana, Madrid.

CONTENTS

PAGE

INTRODUCTORY

PROLOGUE, BANDAR-LOG OR BANDAR-BEE v

EDITOR'S PREFACE vii
Morris Llewellyn Cooke, Consulting Management Engineer.

THE WORKERS AND PRODUCTION x
Samuel Gompers, President, American Federation of Labor.

MANAGEMENT AND PRODUCTION xiii
Fred J. Miller, President, The American Society of Mechanical Engineers.

PART I—THE HUMAN FACTOR AS THE HEART OF INDUSTRY

EVERY WORKER AN ENGINEER 1
Henry Wood Shelton, Consulting Engineer in Management, Philadelphia, Pa.

INDUSTRIAL RELATIONS AND PRODUCTION 7
Matthew Woll, President, International Photo-Engravers Union; Vice-President, American Federation of Labor.

PRODUCTION AND THE PRESERVATION OF INITIATIVE 14
Helen Marot, Author of *The Creative Impulse in Industry*.

THE BASES OF INDUSTRIAL STABILITY 19
Willard E. Hotchkiss, Executive Director of the National Industrial Federation of Clothing Manufacturers and late Executive Secretary of the President's Industrial Conference.

REACHING THE MAINSPRINGS OF THE WILLS OF PEOPLE 26
Arthur J. Todd, University of Minnesota (on leave); Labor Manager, B. Kuppenheimer and Company, Chicago, Ill.

ORGANIZING THE SHOP FOR PRODUCTION 36
R. L. Cornick, Representative of the Workers, Arsenal Orders Branch, Ordnance Department, U. S. A.

COLLECTIVE BARGAINING AND ITS EFFECT ON PRODUCTION 40
William M. Leiserson, Impartial Chairman, Rochester Clothing Market.

PART II—THE DRIFT TOWARD SCIENCE IN INDUSTRY

LABOR AND SCIENCE 50
Edouard Herriot, Mayor of Lyons, Deputy for the Department of the Rhone. Translated from the French by Edward Eyre Hunt.

WILL GREATER PRODUCTION CURE SOCIAL AND INDUSTRIAL UNREST? .. 56
Hugh Frayne, General Organizer, American Federation of Labor.

WHAT IS PRODUCTION? 64
Thomas Warner Mitchell, Consulting Production Engineer, B. Kuppenheimer and Company, Chicago, Ill.

THE PHILOSOPHY OF THE RESTRICTION OF OUTPUT 70
Leon Ardzrooni, New School of Social Research, New York City.

A LABOR ATTITUDE TOWARD PRODUCTION—AN ENGLISH POINT OF VIEW 76
W. A. Appleton, Secretary, General Federation of Trade Unions (English); President, International Federation of Trade Unions.

LABOR AND PRODUCTION 79
Horace B. Drury, Formerly of the Department of Economics and Sociology, Ohio State University.

PART III—SOME MAJOR PROBLEMS OF INDUSTRY

COÖPERATIVE PRODUCTION 89
John H. Walker, President, The Illinois State Federation of Labor.

380761

WOMEN IN PRODUCTIVE INDUSTRY 93
Lillian Erskine, Chief, Bureau of Industrial Statistics, New Jersey Department of Labor, Trenton, N. J.

FEDERAL GOVERNMENT AND PRODUCTION 98
Grant Hamilton, formerly Director Working Conditions Service, United States Department of Labor; now Special Immigrant Inspector.

INDUSTRIAL HYGIENE AS A FACTOR IN PRODUCTION 101
Bernard J. Newman, late Sanitary Expert in Ordnance, War Department.

SOME EXPECTATIONS OF THE WORKERS 108
James M. Lynch, Member, New York State Industrial Commission.

THE FOREMAN—HIS TRAINING AND EDUCATION 121
Benjamin E. Mallary, Department of Industrial Education, Cleveland Public Schools.

RESEARCH AND PRODUCTION 127
Harrison E. Howe, Chairman, Division of Research Extension, National Research Council.

PART IV—THE MANAGER'S PART IN THE ADVENTURE OF INDUSTRY

SELLING PRODUCTION TO THE MANAGEMENT 133
Harlow S. Person, Managing Director, Taylor Society, New York City.

LABOR'S ATTITUDE TOWARD METHODS OF MANAGEMENT 140
John P. Frey, Editor, *International Molders' Journal.*

SHOP CONTROL AS A MANAGER SEES IT 146
Hudson W. Reed, Production Manager, Henry Sonneborn & Company, Inc., Clothing Manufacturers, Baltimore, Md.

LABOR'S INTEREST IN ADMINISTRATION 153
Major General William Crozier, U. S. A., Retired; late Chief of Ordnance.

PRODUCTION AND PROFITS 159
Henry S. Dennison, President, Dennison Manufacturing Company, Framingham, Mass.; President, Taylor Society.

THE MANAGER'S RESPONSIBILITY FOR PRODUCTION 163
Charles de Freminville, Consulting Engineer of the Schneider Works, Creuzot, France; Honorary Member A. S. M. E. Translated from the French by Eleanor Bushnell Cooke.

INDEX 170

BANDAR-LOG OR BANDAR-BEE?

PROLOGUE

From the time a monkey opens his eyes in the morning until drowsiness overpowers him at night, he is pretty much a law unto himself. He does anything he wants to, when he wants to, and as long as he wants to. A whimsical individualism sums up his philosophy of life. The day's end finds him just where he was in the morning. The tribe —bandar-log, Kipling calls them—respond to any leader of the moment and as quickly quit him to follow another or to fetch up individually with a brand-new, suddenly-caught and all-absorbing idea.

Like any other philosophy, it is a charming one if you like the net results of it. The monkey does. On the contrary, the bee doesn't. The bee insists on organization by functions. His philosophy is self-sacrificing, vigorous and stern—a Spartan philosophy applied to production. "Beeficiency" is the Taylor System raised to the nth power; and the bee doesn't get the honey.

If the bee had sense, he'd maintain his present organization a few hours a day—which would easily supply his wants—and be a bit bandar-logish the balance of the time. But he cannot. The reason is because he doesn't think. He's a machine that is a part of a bigger machine. On the other hand, if he did think, he'd immediately tend to become individualistic, and the moment that happened the organization would begin to wabble. There would be argument about how the comb should be built, who should build it, who should boss it, how much honey should go to each; societies for the prevention of this and that would be formed. Social workers must eat; so must bosses; so must societies for the prevention of things.

Nature did not see fit to devise a species having the merits of bandar-log and bee, —a sort of bandar-bee.

A bandar-bee would help us a lot just now. It would be the real super-thing. It would be highly coöperative for a few working hours and highly individualistic the rest of the day. It would accept the notion that working together bee-fashion is the answer to the question of maximum production in minimum time; but being a super-thing, it would reject the notion that the honey gathered should all get into the hands of a few crafty speculators to be sold back at the speculators' price. It would control distribution with the same bee-like coöperative efficiency that it used in production.

It would accept the axiom that self-expression is necessary to a thinking super-thing—that monkey play in a monkey way is after all the best fun in life. It would approve the bandar-log system, in which the individual in his idle hours may sit on a limb and philosophize, or try a new way of weaving twigs, or join the bunch in a frolic, or play with the kids.

Obviously the bandar-bee would be a clear and direct thinker. He would be an intense individualist—so intense an individualist that in order to have the maximum number of hours a day for individualism, he would sink his individualism when he came to his production and distribution hours, and be an intense coöperator. He would treat as wasters those super-bees who would work themselves and others without any thought of the monkey play merely to amass a personal pile of honey. There would be piles of honey, adequate personal piles, but not huge ones.

Individualism and self-interest are about the same thing. The date when the bandar-bee will appear on the earth depends upon the amount of hammering which mankind must undergo to pound into it a realization of the fact that in the long run self-interest can be most permanently promoted by intense and unselfish coöperation in production and distribution.

HERMAN SCHNEIDER in the
Engineering News Record.

EDITOR'S PREFACE

In the statement of aims of the American Federation of Labor issued from its headquarters at Washington, D. C., December 13, 1919, and signed by the principal officers of 110 international labor unions, there occurred this sentence:

"To promote further the production of an adequate supply of the world's needs for use and higher standards of life, we urge that there be established coöperation between the scientists of industry and the representatives of organized workers."

As an evidence of its desire to give heed to this suggestion The American Academy of Political and Social Science requested the writer to edit a volume devoted to American production aims and methods and to plan the book so as to represent the joint effort and point of view of the "organized workers" and the "scientists of industry." The present volume is the result.

It may emphasize the unusual manner in which our authors have been selected to state that no one was asked to contribute to these pages *simply because* he owned something or employed somebody. Official standing in the labor movement and recognized service in the application of science to the purposes of industry have determined eligibility in every case. In using the term science we have in mind the method under which decisions are reached on the facts rather than through tradition or whim or personal opinion. For most of us, science simply involves a close scrutiny of all the considerations affecting any given problem and a demonstrable judgment based on such observations.

A point of view all too generally held depicts industry as the scene of a rapidly developing and a necessarily irreconcilable conflict between the wage workers and those who employ them. This certainly is the attitude of the extremists on both sides: of the ultra-conservative, sometimes called the reactionary, and of the extreme radical, sometimes called the bolshevist. This book has been developed from a radically different conception of the place to which evolution and education have brought us.

True it is that the whole world is in a ferment. But such a state is often a precedent to progress. To assume that to be in the midst of change is to be retrograding is to darken the most glorious pages in the history of the race. We would, of course, be equally false to the teachings of the past were we to assume that change necessarily means progress. Our attitude should rather be one of thankfulness that the world-mind, and our own national mind in concert with it, is seeking new standards. The further spread of education and a more highly developed and organized science make our chances of success all the brighter. To the task of guiding the world's restlessness into useful channels—rather than in checking it—this book is dedicated.

"Never be a bear on America!" was the terse advice a stockbroker once gave to his associates in Wall Street. Back of this waggish statement lies a deep philosophy. We are fully conscious of a certain irresponsibility—a certain quality of waywardness—in our American life. We see all about us class prejudice, political misrule, and special privilege. And yet in the light of our past, it is possible for us to believe—and it is alto-

gether good for us to believe—that in the fullness of time and in our own way we Americans do grapple with whatever stands between us and our destiny and without counting the cost we seek to conquer it. So if we believe in this master American tradition and its more than counterpart—that God ultimately rules in our affairs—then we must approach this great industrial problem with every assurance that the solution must and will be found even though in its accomplishment the American people go down into those same deep waters through which our national purpose has been forged and purified.

It may quite properly be claimed that a careful study of the papers in this volume will furnish a measurably clear revelation of the only possible lines along which American industry can develop if, as we believe, its development is to be ordered, and if the immediate future of industry in our land is to have any relation whatever to its own past and to American institutions in general.

In the following pages almost for the first time the recognized spokesmen of organized labor in this country take an unequivocal stand for production as being in the interest of the wage earners. There is no other single development possible in industry which by comparison could be as important. It is altogether essential for those who would read this book with profit to recognize that labor has already made its momentous decision. Thus one of our prayers has already been answered. We, all of us together, see in "production—and still more production"—the great objective of industry. There is to be no fight on this all-important point on which there could have been no yielding. Capital, labor, management and the public can unite in a common onslaught on the inefficiencies and wastes everywhere prevalent in American industry. So far so good.

But neither industry nor toil is all of life. We work that we may live. We do not live to work. And so both the "representatives of the organized workers" and the "scientists of industry" unite in what is almost a passionate plea for an industry related at all points with what makes for a noble and an ennobling life. Here, too, there are no reservations and here too there can be no compromise. To this task American industrial management must dedicate itself immediately and with every ability and all the zeal it can command. In his foreword, Mr. Gompers makes a generous recognition of the place which the profit motive has in industry. We find the same attitude reflected throughout the book. But influencing every page, we also find the Service motive. There is an absolute unanimity of opinion that where the pursuit of profits makes for waste rather than for the conservation of human and mechanical energy readjustments are inevitable and may be radical.

It might have been anticipated that in inviting two such distinct groups as the "representatives of the organized workers" and the "scientists of industry" to collaborate in a work of this kind a bi-partisan result would have been achieved. As a matter of fact quite a generous accord has been reached on all essential points. It will be well for those who have any real interest in industry—and who has not?—to recognize that these groups look at the questions which make up our present-day industrial problem from much the same angle. Certainly they agree in their attitude toward the two major agencies required in any campaign for production: (1) Collective action on the part of the workers—

"collective bargaining" being the union term for it and (2) science. The workers must have an opportunity to act collectively—"bargain collectively"—and through representatives of their own choosing. The general acceptance of this doctrine will mark the beginning of the development of that same democracy in industry which was initiated some generations ago in our political institutions. To fail to inaugurate the procedures required for collective action in any group on the ground that we cannot see where it will lead is comparable to withholding the vote in the fear that it might on occasion lead to an unfortunate result.

In the same way the idea of science in industry cannot be taken with limitations. No one in industry or out of it can say to science, "Thus far shalt thou go, and no farther!" for the field of science is both boundless and unending. And so while we have an absolutely unavoidable obligation to open our doors to science, we have no responsibility as to its ultimate leadings.

No more succinct statement of our own industrial problem can be made than that given in the "Report on Organized Public Service in the Building Industry" in Great Britain (as summarized in the *Survey* for August 16) where it is declared that the four main factors tending to the limitation of output are:

1. The fear of unemployment.
2. Disinclination of operatives to make unrestricted profit for private employers.
3. Lack of interest owing to non-participation in control.
4. Inefficiency, both managerial and operative.

It is to the consideration of such fundamental questions as these that this book is devoted.

Such a volume as this would have been altogether impossible before the war. One is tempted to say that the developments which have made it possible are not two years old—although most of them are the direct outcome of the war and the world conditions produced by the war. The editor is altogether conscious that the mutual understanding and respect which has been engendered as between leaders of labor and men of science out of which this book has grown is not the result of the work of yesterday. It is indeed the result of years of painstaking and unselfish labor on the part of men who with the spirit of service in their souls combined the imagination to envisage a nobler life for those who toil with an appreciation of the stupendous rôle which technical knowledge must ultimately play in the production of useful goods. In this great group of men who loved liberty even in industry and who interpreted the workers to science and science to the workers, the late Robert G. Valentine was a conspicuous leader. The writer wishes to make a sweeping acknowledgment of the debt which American industry owes to his sympathy and vision.

To my associates in the editing of this volume, Mr. Samuel Gompers and Mr. Fred J. Miller, I desire to express the most sincere thanks for their splendid coöperation. As an American citizen and as a member of the Academy, it has been a very great satisfaction to rediscover the confidence with which the undertakings of the Academy are generally received. It has been a pleasure to labor under such auspices.

MORRIS LLEWELLYN COOKE.

The Workers and Production

EDITOR'S FOREWORD

By Samuel Gompers
President, American Federation of Labor

PRODUCTION is the great world problem of today.

Great portions of the world are in actual paroxysms because the machinery and the intelligence of production have not recovered from the calamity of war.

The reflex of the world's misery finds its expression in the industrial life of our own country.

We cannot escape the problem of production. We must meet it and come as near to a solution as may be possible, or we shall suffer.

We are face to face with no simple problem. No magic will remove the tangle.

Mere expenditure of more muscle power will not bring us out of the difficulty.

It is the intelligent coördination of effort and the proper reward of effort that we must arrive at.

Organized labor stands firm and will continue to stand firm in its demand for a proper consideration of the workers in industry. It will not suffer standards to be broken down. It aims constantly at improvement of standards.

What American genius is called upon to accomplish today is so to guide the machinery of production as to meet the needs, while providing for labor a just reward and a proper share in the business of determining conditions and policies.

Engineering science, in the broadest and best meaning of that term, has open before it in this great quandary of civilization a field that is unlimited and that must inspire to service.

The trade union movement offers its best and it has the right to hope for the best from those whose sphere lies in the management and guidance of industry. The trade union movement welcomes every thought and plan, every device and readjustment that will make expended effort more valuable to humanity. It bars the way only when it is sought to make the worker pay the bill for his own increased effectiveness as a producer.

The workers in industry and the great engineering minds in industry have in common the greatest inspiration in life—service to humanity.

There has already been established a strong bond between these two creative forces. It will be well for the world if this bond can be made stronger and if the actual thought and effort of the two dynamic forces can be more intimately related.

I believe the great rank and file of our people are resolved that there must be a better world in the days and years to come. I believe there is a great determination to remove injustice and to make possible for all useful people a higher, fuller, finer life, with more of freedom and more of self-expression for all.

Almost at the heart of the problem of how to make a reality out of this great human aspiration is the practical business of adjusting the production of those commodities upon which modern civilization rests its existence.

We shall find our way through by no formula or pattern, but by a constant giving of the best thought of all in

a real consecration to the ideal of service.

The workers and production—the title under which I express these thoughts—means the workers and life. That is to say, the workers and the life of the nation, spiritual and mental as well as physical.

To contribute to the thought that is centered upon a better life for those who work, upon a nobler life for the nation and a higher plane for it in the civilization of the world, is a privilege to be sought.

The worker has always given—he has given even unto the bitter dregs of a broken life and an embittered soul. The progress of the world can be measured by the stages of labor's liberation.

The last drag upon the worker's heart and brain, upon his enthusiasm for service, upon his simple efficiency at the bench and forge, is the lingering ideal of production for profit alone.

The greatest single achievement for progress possible to this day and this generation is the substitution in industry of the ideal of production for use—for service—and not for profit alone. The profit ideal constricts the creative productivity of both managers and employes.

It is a great attribute of human nature that it will fling itself prodigally into expenditure of effort that offers opportunity for the free expression of the spirit of man and the ideals of man. The same unfathomed attribute leads men to struggle ceaselessly against compulsion and coercion.

It is not enough to have unchained the bodies of the workers. It will mean infinitely more to the world when the restraints shall all have been removed from the minds and souls of men and women everywhere.

Every tendency and every practice of the labor movement have been consciously or unconsciously toward that end. The intelligent coördination of effort and the proper reward for effort, of which I have spoken, are means toward that end.

The spirit of free adventure and high achievement that a half century ago made of American industry the marvel of the world must be brought back, revived by a re-creation of the freedom for man's imaginative genius and for bold effort that marked that period and the years following.

The men who first threw railroads across America have little in common with the men who today go through an endless repetition of identical motions at a machine or bench in a crowded factory. There is a spiritual difference that directly relates to the sum total of human accomplishment.

Perhaps it will take all the effort of the labor movement and all of the thought of all of the sciences to release the energy that is withheld by the spiritual cramping and binding of the millions. It is the release of this great flood of energy, this dash of spirit, this will to achieve, this spiritual desire to serve, that must be freed for the coming civilization.

To the idealism and aggressiveness of the labor movement the technical skill and the inventive genius of the engineer are fitting and needed complements.

The labor movement cannot and will not sacrifice anything of its militancy, because that is the jewel of its being, the heart throb of its existence. But it can and does welcome every helpful effort toward the development of a higher and better and freer manhood and womanhood. The labor movement is entitled to this coöperative joining of honest effort and the world is in painful need of it. There is a duty to mankind that is above and beyond all other duty and men every-

where are today called upon to answer that high summons.

The workers and production—there is the heart of the struggle for liberation. Liberation is the answer, and only through liberation can there be a solution of our problems. We need to have the thought of men working, instead of workingmen.

The men and women who have given their time and thought to the formulation of the papers published in this volume have given service toward the great end in view. The spark of inspiration is in many of the pages of this volume. It is the hope that the thought that has gone to make this volume a helpful contribution toward the effort to ease the way of progress may be appreciated at its true value and that the seeds here planted may grow and prosper in the minds of men.

Management and Production

EDITOR'S FOREWORD

By Fred J. Miller

President, The American Society of Mechanical Engineers

IN these unsettled times in the industrial field it is to be expected that there will be those who will conclude that there is little hope of a satisfactory, or even a workable solution of our problems. On the other hand there are very many who not only have faith to believe we shall solve these problems but they are sincerely trying, with varying degrees of success, to contribute to their solution.

We are passing through a period of adjustment and it behooves us all to keep in mind that our success in this adjustment will be proportioned to our use of intelligence and reason and that nothing can be hoped for from ignorance and prejudice.

There can be no doubt that much of the misunderstanding between employer and employe may be traced to the fact that each reads, more or less exclusively, the publications that support his views—that indeed must do so, for reasons that are easily understood. Thus each side fails to get the other's viewpoint and it is certain that the industrial situation would be much improved if there could be more of that "getting together" which accompanies a free interchange of views to the end that each side may at least comprehend what the other stands for; and why.

To one who has become more or less surfeited with the arguments put forward by those who are paid, in one way or another, to advocate a given side and must "deliver the goods" it is decidedly refreshing and mentally stimulating to read the views presented in such a series of articles as follow.

The authors range from labor union officials, at one extreme, to heads of large manufacturing and commercial enterprises at the other; with state and national officials, industrial engineers and economists occupying the intermediate ground. It is safe to say that no one can carefully read these articles and fail to acquire from them a very good and accurate idea of what the industrial situation of today is, so far as underlying principles are concerned; and, what the best thought of the leaders on both sides really is.

There are those who, for ten years or more, have recognized and have declared their conviction that the industrial world has been passing through a revolution—for the most part peaceful and constructive, but, nevertheless essentially, a revolution. The Hohenzollern war did not cause this revolution, but only accelerated what was already under way. Among other things it has shown us clearly that the old driver method of industrial management will no longer do. The workmen of the world and as well, the women of every country that participated in the war, have acquired by that participation a new status. Many of the industrial difficulties of the present day are due to the resistance of working men and women everywhere, to being forced back to their former and inferior status. They are insisting that if they are good enough to place their lives at the disposal of the forces of civilization, then they are good enough

to have at least some voice in determining the manner of life they shall lead in the civilization they have striven, they hope successfully, to preserve.

In every country of the world the trend, for years, has been toward democracy; and absolutism, both in governments and in industries, is being generally perceived to be an anachronism in this age of enlightenment. Moreover the revelations of examining boards as to physical fitness for military service, having revealed that an astonishingly large proportion of working people have been much undernourished and overworked, have caused many to do some thinking along fundamental lines. The facts revealed seem to make pertinent the inquiry as to whether or not our modern civilization secures for humanity in general nearly as good living conditions and chances of individual development as did earlier and more primitive conditions. The tendency is to reëxamine our position with respect to our terrestrial environment and to ask why, with the productive powers of man multiplied by myriads of inventions, as they have been within the past century, anyone able and willing to work should, at any time, even temporarily, be without an adequate supply of all that is needed to maintain in good health not only himself, but all who are naturally dependent upon him; and to obtain in addition a fair share of the luxuries which modern civilization is supposed to afford for those who live in civilized countries.

Constantly the line of demarkation is being more clearly drawn between those who render useful service in return for what they obtain of this world's goods and those who do not. Inevitably the road we have travelled in the world's development will be reexamined to discover the turnings we may have made that have taken us so far from the earlier conditions in which men (those who managed to avoid bondage in one form or another), by more or less coöperation, applied their labor directly to the earth's unmonopolized resources, and kept for their own use or disposal literally all they produced, to the present condition, in which, as a matter of common observation and knowledge, reinforced by abundance of statistical evidence, workers, *i.e.* those who perform useful service, either by mental or manual labor, receive for that service only a small part of what they produce.

If, in that road, wrong turns have been made, then a new orientation must take place and we must face the necessity for it or, contemplate the probability that, sooner or later, like the older civilizations that have preceded the present, ours will also pass away.

Many of the most profound and disinterested students of this, our greatest problem, believe that the modern tendency of those who labor to plan for action in their common interest is, after all, the best protection society can have against worse things—evils such as have been alluded to above and which history plainly shows have led often to violence, but almost inevitably to degeneration and social decay.

All who are sincerely trying to understand the present course of events will rejoice that, perhaps now more than ever before, men of large affairs, of proven capacity for leadership, heads of important industrial concerns, are giving evidence of their conviction that autocracy in industries is irreconcilable with democracy in governments. Realizing the very great difference between a body of employes all enthusiastically coöperating toward one object and, on the other hand, a body of employes rendering only such service as they think necessary to hold their

jobs, and only so long as they wish to hold them, these men are giving this problem their best attention and the records of what some of them have accomplished are set forth in the following pages. The reactionaries and stiff-necked autocrats can scarcely continue indefinitely to ignore or belittle the record being made by such men, and in that aspect of the situation there is great encouragement—more perhaps than in any other.

It is not true that production has fallen off everywhere. There are establishments in America wherein production per employe is now greater than before the war and many of them in which it is as great. Investigation of the methods followed in these establishments will convince almost anyone that the driver method of industrial management is passing and is bound to disappear. We must get away from the industrial ideas that have been handed down to us from slavery and from the patriarchal or feudal relation and, one or another form of industrial coöperation must take their place.

In so-called normal times there are more men than there are jobs for them. Employed men will then submit to being driven, knowing that others stand ready to take their places and that, not to submit, may mean deprivation and want for themselves and those dependent upon them. But the war, with its practically unlimited demand for the production and transportation of munitions and food to support the world's armies, changed all that and made jobs so easy to get and to hold that the driver method of management broke down and we are now being shown, more plainly than before, the difference between real leaders of men and mere drivers.

As is shown in the following pages, real brain work must be applied to industrial management. It must be made clear to the people who work that it is to their interest to do the things wanted to be done in the manner and in the quantities fairly to be expected or asked of them and management must, itself, properly attend to its proper and contributory management functions.

There is little cause for profound discouragement, but facts must be faced and dealt with in the true American spirit of fair play and the square deal.

Every Worker an Engineer

By Henry Wood Shelton
Consulting Engineer in Management, Philadelphia, Pa.

SUMMARY

The root meaning of "engineer" is one who uses his inborn creativeness in production. On this basis every worker, from executive to day laborer, should be an engineer.

Industry is so organized that many workers have been deprived of opportunity to be "engineers." The responsibility for this rests primarily upon management which has developed, with machinery, a mechanistic view of industrial organization.

Industry, existing really for man's development, should be organized to give him full freedom in the exercise of his inborn creativeness, rather than to deprive him of it. The use of such freedom is sure in the long run to be not destructive, but constructive and of benefit to society.

In the wise use of freedom men are far from equal, and so leaders are a necessity desired by all of us. True leadership depends upon ability and sincerity in service.

Men may compete in service as well as for profit. Competition for profit is economic warfare and is destructive. Competition in service is coöperation and is constructive.

Our goal of democracy in industry can be reached only by coöperation. Definite steps towards this goal are:

1. **Organizations affording more mutuality of understanding and responsibility among hitherto divided groups.**
2. **Standards established by mutual agreement rather than by dictum.**
3. **More scientific approach to the problems of industry, by organized employees as well as employers.**
4. **Free, open channels of publicity by which the whole truth may be increasingly available and known to all interested.**

THE engineer is the expert in solving the problems of our mastery over the materials and forces of nature. He has gained his power to solve these problems by acquired knowledge, technical training and experience and self-development. Engineers, on the whole, have been high-minded men, dealing with their problems on the basis of fact in a thoroughgoing, scientific way. They have rightly come to regard their calling as a profession, with a profession's fine ideals of public service and high standard of ethics. Their danger has been the class egotism and exclusiveness into which men are apt to fall when they begin to pride themselves on being experts.

The root meaning of "engineer" is one who uses his ingenuity, or natural talent, in production. Ingenuity means inborn inventiveness or creative power. This use of our inborn power gets at the heart of all work. It indicates that every worker, whatever his calling or environment, should be truly an engineer. The general adoption of this idea, together with the developed ideals of the engineering profession, would mean a revolution, but a revolution entirely constructive.

Management's Responsibility for Organization

Workers have been increasingly deprived of opportunity to use their inborn creative power in their work, not only by the development of machine processes, but also by the way our industries have been organized. The great size of modern organization,

with the increasing distance between those at the top and those at the bottom, has led to a rigid absolutism of direction from the top down, with less and less freedom and incentive for individual contribution from the bottom upward. Our organizations have become like the machinery we have invented—cleverly intricate combinations of parts, but static and lifeless until the "juice" is applied. The managers are supposed to provide the "juice." The creativeness of the workers has had to find other channels for expression, often destructive instead of constructive.

The responsibility for this mechanistic view of industrial organization falls squarely upon management. The manager's removal from direct contact with the man at the machine resulted in loss of faith in the man's ability to handle the job right in his own way. He did not find means to identify the man's inherent interest in his own way with an agreed-upon right way, nor did he work with the man for the development of a still better way. Instead, the manager used his own ingenuity to devise rules and regulations to take away the man's freedom to exercise his ingenuity and initiative. Without this freedom, the man, feeling much like a cog in a machine, lost his sense of proprietorship in and responsibility for the job. Without these, he lost interest, and without interest he produced only when driven by the "juice" from the management. Observing this result, but not its cause, the executive lost faith not only in the man's ability, but in his motive as well, and the vicious circle was complete. Thus the management of industry has struck effectively at the root of our tried national ideal—equality of opportunity, and the preservation of initiative.

LEADERSHIP IN INDUSTRY

Modern industry had its origin and sole reason for being in the fact that man learned early that by group effort he could individually gain more than he could single-handedly. Consequently, industry exists only for man and his expanding life—never the other way 'round. When industry deprives him of that gain for which he associated himself with others, it sows the seed of its own destruction.

Some managers fear that men, given full freedom to use their ingenuity and initiative, will turn this freedom into destructive channels. This is the age-old argument in support of every form of repression and slavery. There may be sporadic cases of destructiveness due to inexperience in the use of a freedom of which they have been so long deprived. But, as a celebrated Englishman once said:

> There is only one cure for the evils which newly acquired freedom produces; and that cure is more freedom. . . . Many politicians [and business men] of our time are in the habit of laying it down as a self-evident proposition, that no people ought to be free till they are fit to use their freedom. The maxim is worthy of the fool in the old story, who resolved not to go into the water until he had learned to swim. If men are to wait for liberty until they become wise and good in slavery, they may indeed wait forever.

The instinct of self-preservation makes men want better rather than worse conditions. Where they know what is better, they choose it; where they do not know, they follow chosen leaders. The leader differs from the led not in nature, but in the degree of his knowledge, development and resulting power. In every phase of life we all seek the leadership of the person who knows more, be he physician or priest, lawyer, scientist or engineer.

Test of Leadership

The test of the leader is his ability and sincerity in serving us who wish to be led. When he uses his knowledge and power to exploit us for his private gain, to become our master, sooner or later, be he soap-box orator or Kaiser, we throw off his yoke. Only as he uses his powers in our behalf can he retain our confidence. He is the trustee of our common welfare, and his fate is in our hands. "The justification of any man in the community is his trusteeship to the community" for his wealth, his learning, his power, or whatever may be his superior attainment or advantage. The true organizer or manager, whether of a union or an industry, recognizes this trusteeship. He sees in the group effort of his fellowmen the ideal opportunity and encouragement for the expansion of their individual lives. The progress of the mass depends on the progress of the individual. What hurts one, hurts all; what helps one, helps all.

COMPETITION AND COÖPERATION IN SERVICE

"The equal chance of every one to secure that particular niche in the community to which his abilities and character entitle him is the sound philosophy these United States have been testing out for one hundred and fifty years. Its stimulus is competition." Competition is always for some sort of gain, but it is interesting to note the gradual change coming over the world in its idea of what sort of gain it desires.

The old and still largely prevailing idea of competition was to gain material wealth or volume of profit. It was "every man for himself and the devil take the hindmost." This is nothing but economic warfare, and, like all warfare, is essentially irresponsible and destructive. The gains of civilization have resulted, not because of this kind of competition, but in spite of it. Growing up in the midst of competition for profit has been a competition in service, based on mutuality of interest. The truer name for this sort of competition is coöperation. In it lies the true cause of the gains of civilization, including material wealth. It is economically sound, essentially responsible and constructive. We see it in all group effort and team-work; we see it in the college football eleven; we see it no less in the great combinations of labor, of capital and of industry. Such combinations are based on the elimination of the destructive wastes of competitive warfare between the smaller units, even though the purpose be to enable the larger group to wage war more effectively. In the World War, we find coöperation —competition in service—on the largest scale the world has ever seen. Only by the united organization of their resources in food, munitions, money, and even in men, were the Allies able to win over enemies similarly coöperating. The underlying weakness of the enemy was its purpose to master the world for profit instead of to lead the world in service.

The spirit of competition in service which swept this nation during the war must not be lost. For individuals, corporations, states and nations it was conclusively demonstrated that they gain most who coöperate most. Let us, as a nation and as individuals, not lose the significance of that demonstration. We are in grave danger, by withdrawing from our opportunity and responsibility to serve the world, of losing our spiritual leadership. Such leadership can only be one of service. In the detail relations of industry this is true no less than in the affairs of nations. Those individuals and groups, whether employers or employed, who

fail to recognize and act upon this higher law of coöperation will find their power slipping away and passing to those who recognize this law. This is the bedrock of democracy, both in politics and in industry. This is the enlightened self-interest—the only kind that can ultimately succeed. This should be our goal.

STEPS TOWARD INDUSTRIAL DEMOCRACY

A vision of the goal is of small value without taking definite steps to get there. Every effort which brings men into closer association, with increased mutual understanding and responsibility, is a step in the right direction. Organizations of producers, consumers, employers, employees, engineers, etc., are steps, because based on mutual interest and service within the group. Their danger lies in the use of their group power to exploit other groups. Therefore, we must go a step farther. We must develop organizations bringing different groups together in coöperation. We must have not only chambers of commerce and federations of labor, but associations of industries as well, in which employers, employees and the public can broaden and strengthen mutual understanding and responsibility. The idea of unity and brotherhood emphasized in the trade union, the fraternal and the business association, must grow out of its exclusiveness and self-interest and into inclusiveness and coöperative service.

More mutuality will not reduce men to a dead-level. Merit—the degree of a man's development—will always be relative. We can, however, as another definite step towards our goal, greatly improve our methods of establishing, recognizing, and rewarding relative merit, and of determining the standards by which merit shall be gauged. As society builds up its common law, so must each group build up its standards of merit. No individual can determine justice for another. Even our duly constituted judges are supposed merely to interpret and apply the law, not to make it. The mistaken effort of managers in the past to make, interpret, and execute the rules of their organization, or, more often, in the absence of any rules, to be judge, jury and executioner, has been a naturally prolific source of trouble.

As "government derives its just powers from the consent of the governed," so standards may properly be established only by mutual agreement. The agreement may operate in any one of several ways. In some cases it may involve the direct vote of every one concerned, as in a referendum. In other cases, it may operate through elected representatives, as in shop committees. In still other cases, it may operate as willingness to follow the decision of a recognized expert or leader, as we all follow the direction of the doctor or the traffic-cop. In whatever way agreement or consent may operate, it is always there if the standard is going to work.

The measurement of merit seems more difficult, but only because it has been given less study and effort. Merit is composed not only of physical, but also of emotional and mental qualities. Physical merit is tangible, and has long been measured by records of performance and progress in units of quantity, quality and cost. The emotional and mental qualities are less tangible, but quite as important. The higher the type of work done, the more vital do these "intangibles" become. Their evaluation, however, has been crude and haphazard, resting on either snap and admittedly prejudiced judgments by individuals, or on the belief that sooner or later a man

finds his level. Yet the medium in which each finds his level is the judgment of his fellowmen. Only the systematic recording of that judgment is needed to measure very definitely each man's level with respect to the intangibles, such as skill, reliability, and intelligence. The recent development of periodic mutual ratings has proved a practical means to this end. Such recording of emotional and mental as well as physical performance and progress affords a more complete measure of merit, and, consequently, a surer foundation for justice. When each one sees himself as others see him, and can improve his relative batting average by his own efforts, we get a demonstration of the power of public opinion as an incentive to self-development. These are but examples of definite steps in the direction of our goal of democracy.

Equal opportunity and the preservation of initiative in production are utterly ineffectual without a knowledge of the natural laws and forces with which we are dealing. As we saw in the beginning, the investigation of these laws and forces on the basis of fact instead of guess work is the science of engineering applied to production. The development of a knowledge and mastery of these laws and forces should not be confined to the professional engineer. Every worker with hand and brain may be an engineer, applying the scientific method to his own problems, and by the accumulation of facts, and the discovery of the laws and forces which underly them, he may become more and more the master instead of the slave of his environment.

Organized labor can take a great step in this respect. In the past it has been largely an onlooker in the advancement of science, and in the struggle with the problems of production. It has left to the employer most of the initiative in the employment of men and means to achieve the mastery of nature, albeit seeking an ever larger share of the results of that mastery. There are whole ranges of natural forces being studied and utilized by the employer today that labor has let severely alone. Until organized labor definitely lines up for constructive study and the accumulation of knowledge in the science of industry and production, it can never hope to have the particular power which that knowledge gives. "Knowledge is power." As long as the employer has stores of knowledge which the employee has not, their bargaining power, whether individual or collective, will remain unequal. The sources of knowledge are equally available to all. I believe organized labor could not take a wiser or more far-sighted step than to enter into competition with employers in the service of developing the knowledge and discovering the laws on which the science and art of industry are based.

IMPORTANCE OF PUBLICITY IN INDUSTRY

Perhaps the greatest advance towards the goal, of value to employers, employees, and public alike, can be brought about by widening and multiplying the channels of publicity. I do not refer to paid propaganda for private profit. I refer to ways and means of making the truth easily and freely available to all. We see the power of publicity daily demonstrated. Commercial advertising pays untold sums for the privilege of using it for profit. The Belgian Relief work, the Food Administration work, the Red Cross work, in fact all the great service work of the war depended on it.

The general trend towards openness is as inevitable as it is encouraging.

Secret business methods, secret prices, secret railroad tariffs, and now secret treaties, are all passing away; crime, profiteering, graft and exploitation flourish only in secret. The criminal or the grafter, whether individual, corporate or national, fears one thing above all else—publicity of the truth. He who has nothing to hide alone is free, irrespective of wealth or position. If we think it through, we will agree that in complete openness—publicity—lies one of the potent remedies for our industrial ills. Like sunshine, it fosters healthy growth, and kills or cures the unhealthy.

The channels of publicity must be free channels, not subsidized for private ends. The only control over them must be by way of insuring their freedom. It is knowing the truth which makes us free. When the cost, quality, and quantity of the service we are rendering are as available to those interested as "Babe" Ruth's batting average, a man will no longer be without honor in his own country. The stimulus of competition will remain, keener than ever. But instead of competition for the most profit, it will be competition for the best showing. Compensation will not be wanting. The reward is full and unbegrudged for those who excel in service.

This today is the spirit of the professional engineer. It will be the spirit of business when every worker from president to day laborer makes up his mind to be an engineer. In the vivid words of Herbert Hoover:

> Unlike the doctor, his is not the struggle to save the weak. Unlike the soldier, destruction is not his prime function. Unlike the lawyer, quarrels are not his daily bread. Engineering is the profession of creation and of construction, of stimulation of human effort and accomplishment.

Industrial Relations and Production

By Matthew Woll

President, International Photo-Engravers Union; Vice-President, American Federation of Labor

THE American workers seek industrial liberty and not industrial license. The present industrial system is destined to remain, for a long time at least, in its main outlines. Private ownership of capital, freedom of choice and freedom of action—these doctrines of contractualism are not likely to be swept aside or supplemented by collectivism or governmental organization and operation of industries. Despite the alluring promises held forth by its advocates and special pleaders, socialism will not be accepted as an improvement on our present industrial system. Instead, it is believed to spell bureaucracy, political tyranny and to render helpless the individual as a factor in ordering his own life, and to develop social inefficiency and industrial decadence.

The present industrial system is far from being perfect. It is sorely in need of modification and improvement. Its defects include waste and inefficiency in the production and distribution of the commodities of life. It renders an insufficient reward for services contributed by the vast majority of workers and the abnormally and unnecessarily large incomes and returns for a small minority of privileged capitalists.

The great World War, just ended, has produced a revolution in the minds of men. New conceptions of the rights of man and a broader vision of the principles of democracy have developed out of this gigantic conflict between the democratic and autocratic nations of the world. Human relations and the conceptions of property and of property rights are obscurely but surely in a state of revolution. In the world of finance we are marking a passage from the economy of tangible things to the economy of power. We note more clearly today that the validation of property rights depends almost entirely upon an unbroken current of productive power. The bulk of modern securities is not investments upon property but upon productive processes. When productive processes fail, securities lapse. When producers —the workers—discontinue giving service, property rights are insecure and endangered. All property rights and incomes are subject to the intrinsic law of production.

With the granaries of the world almost exhausted, with many nations of the world thrown into industrial chaos and with securities of a greater extent and larger amounts than the world has ever realized, much less conceived, there is the greatest possible need for production to meet the requirements of the people of all nations and to prevent a social and industrial catastrophe which will surely follow a failure to validate existing financial and commericial obligations. This need accentuates the importance of promoting production in accordance with the fundamental principles of the applied knowledge and science of power and renders imperative the securing and holding of the good-will, the industrial morale of the great mass of producers —the wage earners—by the principles of fair treatment, justice, freedom and democracy.

The workers of America are fully conscious that the world needs things

for use and that standards of life improve only as production for consumption increases. They are fully aware that industrial stability cannot be established by a maximum of return for a minimum of service. They insist, however, that profit making is not the basic justification of business enterprises. They hold that the first charge on industry is a decent livelihood for the workers and their treatment as human beings, not as slaves or serfs or as tools of production.

The workers of our country are anxious to work out improved methods of industry and increase productivity to its maximum consistent with the health and welfare of the wage earners. In return, the workers demand that production will be used for service and not for profits alone.

In addition to labor, capital is one of the important arteries of modern industry. In considering this subject, organized labor has carefully distinguished saved-capital (capital of intrinsic wealth) from credit-capital (capital founded upon community productiveness, the skill and knowledge, the culture of ages, inherited, acquired and developed). Credit or credit-capital being inherently social in nature, the workers demand that credit-capital should be used to serve the needs of production instead of levying tolls upon community activity as high as the traffic will bear. Heretofore, credit-capital—the real life blood of modern industry—has not been administered in proportion to confidence in productive possibilities founded upon technical advice and ascertainment of public needs. To the contrary, it has been used to enrich a few and to impoverish the great majority and to burden rather than to help industry. The workers demand that credit-capital serve production needs, instead of increasing incomes and holdings of financiers; that it should be administered as a public trust and in the interest of all the people.

IMPORTANCE OF LABOR MANAGEMENT

One of the constructive results disclosed during the war period was the realization of the importance of labor management. Waste of man power should not be permitted to continue through maladjustment or failure to secure the full ability of any individual. Up to the present time, man power has been largely considered and treated as one of the least valuable elemental factors in production. Industrial and commercial concerns have been keenly alert to the importance of competent and efficient business management. Business has been equally keen in securing efficient management of all mechanical departments dealing with plants, equipment and other physical assets. Efficient labor management has received no serious attention until within the recent past and then, too often, from a purely academic point of view. There is intrinsically involved in the subject of labor management many of the labor problems now pressing for a fair, just and intelligent solution. How best to reduce the wasteful and expensive labor turnover to a minimum, how to secure and retain the good-will of workers, how to attract a maximum of exertion and production without compulsion are problems which depend to a large degree upon efficient labor management.

LABOR PROBLEMS OF PRODUCTION

There is always a best way to do things—a better way of approaching and administering labor problems of production. Experience has demonstrated that the better way is by and through the interchange of information, experience and coöperation be-

tween employers and employees collectively. The workers usually possess knowledge of production totally outside of the experiences of employers. Their practical industrial training and experience develop a knowledge they alone can possess. Industrial and business managers, too, acquire a knowledge and develop an understanding totally outside of the experience and knowledge of the employees. Where there is an absence of a mutual understanding upon these different branches of business and industry there is a fullness of opportunity for misunderstanding, confusion and friction. It is imperative that an interchange of information, experience and purpose of plans should be provided between employers and workers for their mutual and intelligent guidance and direction if a maximum of production is to be obtained with a minimum of confusion, waste and friction. This can only be accomplished through coöperative and collective principles and procedure.

Whenever the general motive power in a plant fails, the chief engineer, or whoever may be charged with the duty of providing uninterrupted generated power, must determine accurately and remove speedily and efficiently the cause of interruption. Likewise, labor management should be employed to determine accurately and remove efficiently the cause for interruption of labor power. The most satisfactory and efficient way of accomplishing this is by giving the workers the opportunity of qualifying to such administrative positions. By this method a chance is given the workers to strive and qualify for an industrial career; at the same time by this selection there is brought into industry the greatest possible stimulus and helpful abilities.

Contrary to a prevailing opinion, the trade union workmen and the trade union movement have never disapproved and do not disapprove of shop committees. To the contrary, organized labor believes that shop committees, confined to their proper sphere of activities, are helpful in promoting a better understanding and advancing production to its highest possible maximum. It was in 1918 that the convention of the American Federation of Labor officially declared that in all large permanent shops a regular arrangement should be provided whereby:

First, a committee of the workers would regularly meet with the shop management to confer over matters of production; and whereby:

Second, such committee could carry, beyond the foreman and the superintendent, to the general manager or to the president, any important grievance which the workers may have with reference to wages, hours and conditions.

The convention further declared that it is fundamental for efficiency in production that the essentials of team work be understood and followed by all and that an opportunity must be provided for intercourse and exchange of viewpoints between workers and managers.

Experience had demonstrated, however, that the functions of shop committees cannot be successfully enlarged to include the functions now undertaken, through the trade union organization of the workers. The business of any particular industry is not confined to one particular plant or concern. Business comprehends many individual concerns, all engaged in the same or closely allied or kindred trades and industries. In order that there may be some general minimum standards, requirements of work-shop practices and equal compensation for equal work performed, it is imperative that these standards and working requirements be established through collective agreements which include all the work-

ers of a like trade in the several localities. This can be accomplished only through the trade union organization of the workers. To attempt the attainment of this end through shop committees, shop councils, work councils, etc., can lead only to greater variation of standards, multiplicity of shop practices and an endless process of confusion, followed in its trail by an ever increasing turnover, inefficient workers and serious strife and friction.

While the workers do not disapprove of efficiency in workmanship or efficiency in production, they are opposed to the so-called efficiency systems which gauge the workman's usefulness as a productive unit by mechanical rules and devices which do not embrace the safeguarding of the life, health and welfare of the workers. While the workers oppose all efficiency systems whose chief merit is to speed up the workers regardless of harmful effects upon their physical well-being, they have strongly urged that there be established a coöperation between the scientists of industry and the representatives of the organized workers. Only in that way can improved methods and efficient processes of production be introduced successfully and production placed on a scientific basis which will give full consideration to the welfare and well-being of the wage earners and of business.

IMPORTANCE OF HEALTH TO PRODUCTION

There exists an inseparable relationship between health and output. There is intricately involved in the economy of labor power the problem of preventing fatigue, ill health and an early or an abrupt death produced in many of our industrial occupations.

Proper attention to the successful solving of this problem leads to increased productivity. Experience has demonstrated that long hours of work, unsanitary workshops and speeding up of workers have invariably led to industrial fatigue, accidents, ill health and the early or abrupt death of the workers. It has been proved, likewise, that a reduction of working hours to not more than eight hours a day removes industrial fatigue and enhances production, lessens accidents and ill health and removes an unnecessary wastage of labor power and industrial capacity. A reduction of working hours prolongs the life and usefulness of the worker as an industrial factor and improves the morals and standards of citizenship. After a three years study of details or problems relating to the length of the working day, experts of the public health service recently announced its decision of the survey. Its outstanding conclusions are:

> The outstanding feature of the eight-hour day is a steady maintenance of output. The outstanding feature of the ten-hour day system is a decline of output.
>
> Under the eight-hour system work begins and ends on schedule time under full power. Lost time is reduced to a minimum. Under the ten-hour system work ceases regularly before the end of the spell. Lost time is frequent.
>
> Under the ten-hour system workers appear to artificially restrict their efforts and to keep pace with the less efficient workers. Under the eight-hour system the output varies more nearly according to the individual capacity of the workers; that is, each is more likely to do his utmost rather than an average day's work regulated by a low standard.

The report also states that fatigue from long hours causes a rise in the number of accidents.

> If for any reason production is speeded up in the last hour when the workers are tired, the rise in the number of accidents mounts so rapidly as to leave no room to doubt that the higher accident risk accompanies the decline in working capacity of the employee.

Trade union records likewise disclose the inseparable relation between

ill health and long hours; to illustrate: tuberculosis and other preventable diseases had been destructive to cigarmakers for many years. In 1888, two years after the inauguration of the eight-hour work day, 51 per cent of the total number of deaths was due to tuberculosis. This percentage has been decreased by 30 per cent as the following statistics show:

In 1890, the total deaths were 212, of which the proportion due to tuberculosis was 49 per cent; in 1895, of 348 deaths, the proportion was 35 per cent; in 1900, of 339 deaths, the proportion was 33 per cent; in 1910, of 588 deaths, the proportion was 21.5 per cent; in 1911, of 622 deaths, the proportion was 20.1 per cent.

There exists a similar relation between the length of the worker's life and his hours of toil. All attempts made thus far to ascertain accurately this relationship through data secured from employers have failed sadly. The failure of these attempts is readily understood when the data secured from these sources is considered in connection with the extreme "turnover" of labor in the plants investigated. Indeed, the only practical agency to determine correctly this relationship is the trade union organization where there exists no "turnover" of membership and where accurate records are kept of the life of its members.

The trade union organizations which have kept the most complete records of the lives of their membership for a great number of years are the Cigarmakers International Union and the International Typographical Union. In 1886 the cigarmakers secured the eight-hour day.

In 1888, the average length of life of members of the Cigarmakers International Union was thirty-one years; in 1890, the average had been increased to thirty-seven years; in 1900, to forty-three years; in 1910, to forty-nine years, and in 1911 to fifty years. The organization which decreased daily hours of work and increased wages had thus increased the average lives of cigarmakers by eighteen years in a period of twenty-three years.

These principles are further confirmed by the life statistics of the wives of cigarmakers. In 1890, the average life of the wives of union members was thirty-eight years; in 1900, forty-six years; in 1910, fifty years; in 1911, forty-eight years. The average increase during this period of twenty-one years is ten years.

Due to the shorter work day put into effect by the International Typographical Union, the mortality of printers has decreased. In the year 1900 the average age at death was 41.25; in the year 1913 the average age at death was 49.24, thus showing that almost eight years have been added to the life of working printers through the beneficial work of the organization.

These results demonstrate beyond peradventure of a doubt that there is an inseparable relationship between the hours of toil and the health and life of the wage earners. To reduce ill health and to extend the life of the workers by the reduction of working hours adds value to the human productive factor in our industrial society and instead of reducing industrial activity, increases the productive capacity of the workers.

HIGH WAGES AN INCENTIVE TO PRODUCTION

The demand for a progressively advancing standard of life and maintenance of industrial morale requires that all workers must be allowed a sufficient reward for their contribution to industry and society. It is no longer a matter of conjecture or dis-

pute, but an admitted fact that only in high-wage countries is productivity in industries greatest. Low wage countries present the least degree of productivity. Low paid industries offer their people only low standards of living. In countries where wages are best, the greatest progress has been made in industrial, economic, social and political advancement, in art, literature, education, science and in the wealth of the people generally. Employers should not hesitate to pay the highest wage possible to the workers. Minimum wage standards should be agreed upon in every trade and calling through collective action by employers and workers. High wages are not detrimental either to business or to the state, as they are more than balanced by an increase in production where reasonable facilities are provided.

MISTRUST BETWEEN EMPLOYER AND EMPLOYEE A DRAWBACK TO PRODUCTION

Never in the history of the world have the employers had such an opportunity as at present, if moved by a real sense of national duty, to meet the representatives of organized labor and decide to make peace and enter into collective agreements with the workers. Unfortunately, many employers have come to look upon employees as nothing more than a means of making profits. The average employe, in turn, has come to look upon employers as individuals not to be trusted. A state of mind has developed out of this mutual mistrust that employers and employees are anxious at all times to thwart the other when the opportunity presents itself. A better state of mind must prevail if a maximum productivity is to be attained. This can only be brought about by the employers' recognition of the rights of the workers to organize into trade unions and to bargain collectively, and by inviting rather than discouraging or denying the workers' representatives the opportunity to meet and deal with them on a common basis and in accordance with the principles of justice. The workers aspire to be treated as human beings and not by a number as a productive piece of machinery. The workers desire that employers should realize that they are interested in productive processes as individuals and as aggregates and should be taken into consideration in the industry in which they are engaged.

Productive power is lessened where autocratic management prevails. Without the establishing of mutual confidence and good-will there cannot be a maximum degree of productivity. No employer has a vested right to the confidence and good-will of employees. That must be earned, as between men. It can be earned only when employers deal with workers as human beings and not as machines; when they recognize that the day of autocracy in industry has passed and that the day for the applied principles of democracy in industry is here; when they will as freely concede to the workers the collective rights exercised by themselves, viz., the right of organization, the right of representatives of their own choosing, the right of negotiating and enforcing collective agreements and the right to an impelling voice in all phases of industry which vitally affect and reflect upon their status and relation as workers.

To secure these ends and to assure continuous production and improved industrial relations between employers and employees in each industry, there should be created, through a voluntary procedure, a national conference board to consist of an equal number of representatives of employers and workers.

These national conference boards should consider all subjects affecting the progress and well being of the trade, encourage methods of promoting efficiency of production from the viewpoint of those engaged in the industry and enforce practices which will protect life and limb as well as recognize and safeguard the rights of all concerned within the industry.

Instead of an attitude of indifference or hostility, the federal government, acting through the Department of Labor, should encourage and assist in the formation of these trade or industrial national conference boards and provide them with adequate and helpful information and advice upon all matters affecting the life, health and general welfare of the workers as well as affecting the best interests of the employers and the industry or trade as a whole. In return, these national conference boards would prove of invaluable help in counseling and advising with the government in all industrial matters whenever needful legislation is being considered or is deemed essential. Indeed, the establishing of such national industrial boards or trade councils will not only prove helpful to promote industrial tranquility and increased productivity in a time of peace, but will also prove the greatest possible source of national strength, virility and helpfulness in times of national disaster or distress.

The workers have the right to a just proportion of the wealth they help to create. They have the right to earn out of their toil an opportunity for their children equal with that of any other citizen. They have the right to every practical safeguard for their physical safety, health and comfort while at work. They have the right to an adequate compensation for physical injury or ill health occasioned in the course of production or inherently associated with productive process.

These betterments for wage earners, these incentives to an increasing productive capacity, depend upon the control the workers exercise through their economic organizations—their trade unions. The free exercise of this control brings with it an increasing responsibility and makes possible an increasing production. In the present large scale industry the organization of the workers into trade unions, the full application of the principles of representation, the establishing of collective agreements between employers and organized wage earners and their coöperation in the management and conduct of business and industry are the fundamental steps necessary toward the proper development of our industrial activities for service and for the attainment and perpetuity of the highest possible degree of productivity.

Production and the Preservation of Initiative

By Helen Marot
Author of *The Creative Impulse in Industry*

THE ability of peoples to distinguish between the character of motives which underlie behavior is an index of their intellectual development and emotional control. Their ability to turn such knowledge and wisdom to account in their conduct in every day life is a measure of their culture. It may represent, in the long run, their relative position in world leadership. That is what the acquisition of such power must, in the end, represent, if the processes of life are by the way of expansion and growth of individual consciousness.

In America we are singularly unaware of the complex nature of emotions and reactions to modern stimuli. The average American takes for granted a far greater similarity in emotional response than exists. Moreover, he only recognizes its operation within fields singularly limited. He is commonly annoyed by subtle distinction and emotional analysis. There are no modern people or indeed peoples of the great eastern nations so unaware as our own of the infinite variation in human reactions and the complex nature of emotions which behavior reflects.

It was perhaps because of our incredible neglect of motives and stimuli, which operate in modern life, that the first conscious effort to apply psychology to industrial organization (the most complex phase of organized society) occurred in America. It was against heavy odds that the new school of industrial managers made its attempt to take human reactions into account in connection with the effort to increase the production efficiency of mechanical labor. As the financial reward is the motive which underlies and prompts industrial effort, their attention naturally was turned on that as the problem of first importance. Their experiments along these lines were heavily handicapped at the outset for the reason that, as the financial stimulus is used for reward, it is insatiable; also as a stimulus for the production of goods, it works by indirection; it arouses a desire for the reward, not a desire to create wealth.

Financial Incentive the Industrial Motive

The principle on which industry is run is that work is pain, but on the promise of reward, which will buy leisure and goods, individual initiative will unfold, intellectual interest will assert itself, and men will function to the best of their ability as responsible units in the enterprise. A promoter of industry makes no pretensions as to ulterior motives in undertaking an enterprise. His recognized, advertised and proud purpose is to earn a living, or, if successful, to amass a fortune. He invites capital to enter on the same ground and promises attractive dividends. He bids for the service of men with offers of wage payments, and on the expectation that they will realize on his offer as much or more than elsewhere, capital and labor accept.

The expectation is that men will work to the limit of their capacity; that they will release creative talents and establish workmanship standards in proportion to the reward offered. As they accumulate money, *which they*

are all expected to do if the system works satisfactorily, they may gain mastery over goods and the time and energy of other men which will release them from the pain and effort of work and bring them, in the end, power and leisure. It is supposed that men will find by the way and here and there some enjoyment in industry, but it is anticipated that the real joy will only accrue from the labor which they can get others to do for them and from the fact of their success in attaining the state of mastery and leisure.

The whole scheme is evolved not for the *purpose* of production but for the *financial reward* attached. As men entered industry for the purpose of acquiring wealth rather than producing it, it followed that attention centered for stimulus on the reward. No effort has been made to discover whether workmanship, creative effort, interest in a community's use and wont, furnished their own emotional stimuli for the release of necessary energy. No effort was made along these lines because the primary motive is reward and all the rest is by-product, so far as motive is concerned. The point I want to make is not whether the principle on which industry is run is an ethical one, or whether the institution is good or bad from a social point of view. I want to call attention to signs that point to the fact that the financial incentive is losing its power to realize the purpose of the system; for that reason, it is highly important to determine, so far as it is possible, whether the production of wealth, under modern conditions, can be so organized as to evoke an incentive of its own, without depending solely upon a stimulus that works for response by indirection.

Before the war there was no widespread suspicion that wages alone might fail as an inspirational expedient for getting men to work. The burning issues of that time were how much or how little should be paid out of profits and earnings; what schemes of payment would insure labor returns; how to administer the wage so as to increase the stimulating effect of each dose without increasing its size. Bonus schemes, bearing a relation between payment and the release of energy as well as offering a special premium on effort, were introduced along with profit sharing schemes which tied up the financial interest of the workers to the capital investment. In spite of a great expenditure of ingenuity on the part of managers to increase labor's contribution, the manufacturers, before the war, registered wholesale and peevish complaint that the industrial army did not produce enough men to fill the positions of superintendents and foremen which industrial progress required. The lack of men to fill the positions, the lack of ambition in the rank and file to work for promotion was equalled only by the loss of drive in the execution of the routine jobs. American manufacturers summed up the situation as indicating an innate lack of initiative.

LESSONS FROM WAR-TIME PRODUCTION

It was soon to appear that the failure of the workers to sustain a required output and their lack of interest in positions of responsibility indicated neither the absence nor the presence of initiative or drive latent in the corps of skilled or unskilled labor. The failure we presently discovered out of our experience with war-time production was due to insufficient and infrequent increase of wage rates, as well as the absence in general of exciting stimuli. The sudden response of all sorts, kinds and classes of producers to the war stimulus and the increased wage rate exhibited a latent production power

that surpassed the dreams of the most exacting entrepreneur. During the war, labor demonstrated a capacity which revealed a reservoir of productive energy which had never been more than tapped by industry as it had been run. I am speaking exclusively now of the actual increase of productive energy. I have not forgotten that the increase in the bulk of goods manufactured was due as well to the fact that business speculation in the limitation of markets was thwarted in certain extensive areas.

We were destined to learn another illuminating lesson when the war ended. The drive for wages and profits that set in after the signing of the armistice bore no relation whatever, as it had during the war, to the output of goods. For the first time it has become a matter of public knowledge and recognition that there is no *organic* relation between financial stimulus and output. It appeared that, in normal times, prices could be made to cover the discrepancy, but the real difficulty to face in the continuation of the scheme was the fact that wage earners realized the limitation of their old wage drive policy which they had depended upon for a better distribution of goods. They now know that no material advance in real wages can be made; that increased rates can be met by a manipulation of price and underemployment. It is not impossible, it indeed seems probable that as that fact becomes an established one in the mind of wage earners that their "initiative" will continue to diminish. Whether the demonstration of diminishing returns of labor effort will reach a point where industry fails to draw speculative capital I do not pretend to know. It is enough for present purposes to draw a speculative interest in the drift of things and an appreciation of what it means when trade unionists decide that the wage motive alone is not sufficient for purposes of organization.

Trade union policy throughout the world is undergoing revision. In addition to bargaining for shorter hours and higher wages the unions are demanding status, control or participation in management. In France and in Italy the workers are training for the assumption of industrial responsibility and are including in their unions all technicians who function productively. In England many employers as well as the government have accepted the new position of the unions as rational and indeed necessary. For the first time, the American Federation inserts a plank in its platform which admits the necessity of labor shifting its position from the old one of irresponsible wage working to responsibility for production policy as well as output.

I have no predictions to make as to the next chapter in this illuminating story. It is not my purpose to do more than point out that the financial stimulus as a principle of operation is not sacro-sanct; that some more direct motivation for the realization of productive effort may evolve out of the necessity; that a motivation which induces the organic response of creative desire and workmanship standards, which conforms more closely to social use and wont, deserves critical analysis and reception. Moreover, we are in the position, which is favorable to more impersonal and rational examination of the financial incentive than before, for the reason that the internal weakness of the whole industrial structure is more apparent. Every engineer, who has approached industry in a spirit of science, has discovered that the interests of speculative capital and production are not one and the same; that a high state of industrial

economy is not consistent with the interest of speculative capital which depends upon the manipulation of markets and prices. It is also clearly evident to the man in the street that the financial motive is the direct cause of the blind conflict which engulfs economic life.

THE "WILL TO POWER" A PERVERSION OF INITIATIVE

While the actual functioning of the great mass of individuals involved in industry is directly related to production, their intention, as we have seen, is to reap the harvest, to gather in the spoils without functioning so far as that is possible. As a result, the system is subjected to manipulation from top to bottom. Wherever the occasion permits, initiative on which we place so high a value is converted into a "will to power" instead of functional activity. As a result every exhibition of initiative is baulked at the start by the underlying suspicion. A trifling illustration will show how deep seated the suspicion is and how management carefully guards the industry against discovery by a common worker of his own potential value. There are factories where it is realized that the men who work at the bench may have an occasional idea of economic importance to the enterprise. On that account the workers are invited *to drop their ideas in a box* and the managers will take cognizance of them as suggestions, will consider their value and probably report whether use can be made of them. It is graciously assumed that the workers will be flattered by the recognition that they have minds. There is no realization that a man of integrity, who has initiative and workmanship interest, is impelled to test out through first-hand experience the value of his idea. The greater his integrity and his ability the more unwilling he is to accept a second-hand valuation.

A system that requires mastery over other men's ability robs the industry of the common desire of those who are working to promote it; it robs the industry of the discipline which men get in the testing out of their ideas; it leaves a mass of undigested ideas in the minds of men, which are sure to fester because there is no opportunity to discover whether they are good or bad; it creates issues which have no functional value.

Every strike, boycott, or malingering act furnishes an example of emotional complexes, which is the outgrowth of indirect functioning of the underlying motive. On these occasions labor is regarded as an enemy to society, as a social derelict. Industry takes on the character of social service at such times in the minds of the people who are inconvenienced, and the motive of the employers, who are opposed to the action of the workers, becomes altruistic, to those inconvenienced. The thinly veiled contempt for the man who refuses to produce except for reward is actual contempt for men who have not acquired, under the system, the position of masters. Wage earners who refuse to work are regarded as enemies of society even while their employers are admired for running their business to suit themselves. Another evidence of the split in the psychological reaction in our industrial behavior is the assumed respect theoretically given the worker who bargains individually for a division of the spoils, and the contempt for men who bargain collectively. Collective bargaining is an open and above board admission that industry, which poses at convenient times as a social undertaking devoted to the production of wealth, is a public conspiracy for the exploitation of it.

In spite of what has been inferred above, there is good reason for the respect paid to the masters of industry. While they have manipulated the market of money and goods with a single eye to profits, they have actually promoted industry and carried the responsibility of business enterprise which supports the kind of industry we are familiar with in America. It has been assumed that a single eye for profits and maximum production of goods and economy of production energy were coincident. We are only now beginning to realize that business interests are no more intimately related to production economy and maximum output than labor interests. This realization is destined to destroy the traditional confidence in business leadership.

It may be that the business scheme, dependent upon the financial stimulus, will weather, for some time to come, the case that has piled up against it. But the immediate situation is that for the first time in the history of modern industry the working arrangement, irrespective of the gratifications it has brought or the misery it has imposed, is demanding finer discrimination, a better analysis as to what men can be induced to deliver.

INCENTIVES OTHER THAN FINANCIAL

What ways may be taken to restore confidence in business leadership and the worker's faith in a better distribution of wealth through increase of wage rates is the exciting matter of the present moment. The opposition to labor's proposal to share with capital the responsibility of production we know will be met with unrelenting opposition unless the wage stimulus continuously fails to yield the response which speculative capital requires. If it does, then a new and rich field for industrial science will be started.

The most promising phase of the present outlook is the offer of organized labor to change its position from the old one of irresponsibility. It does not indicate the change of heart on the part of labor for which employers have prayed. It does not mean the responsibility for the execution of routine jobs as prescribed by management. It is not a change of heart, but it is an intelligent recognition of the facts which govern the situation. This phase of the situation is promising because it is possible to create scientific conditions, trace the relation between cause and effect when the mass of individuals who flood the industrial institution are responsible members of it. The outstanding problem for the production managers and economists, but primarily for labor, is how to take organized labor at its word. It is clearly a matter of organization technique; the working out of an organization in which the financial incentive is subordinate to creative interest and subordinate also to the use and wont of the community for whom goods are made. An organization for production, based upon such an objective, would stand to win initiative instead of "will to power"—because where the motive is production instead of reward the extent to which people function and their ability to function become an actual and not a pretentious reason for their participation in industry. Mastery over men for the sake of mastery is will to power, and is thwarted as the interest or drive of individuals is turned into creative experience.

The Bases of Industrial Stability[1]

By Willard E. Hotchkiss

Executive Director of the National Industrial Federation of Clothing Manufacturers and Late Executive Secretary of the President's Industrial Conference

INDUSTRIAL stability is a question of adjustment of human beings to each other and to their work. It involves in part an adaptation of the individual to his work, but it is also influenced by the larger currents of thought to which men respond, not primarily as individuals, but as groups. In this sense, it becomes a phase of the general problem of industrial unrest. This is the angle of the subject to which chiefly I shall address my remarks.

We do well, I think, not to consider industrial unrest primarily as a post-war phenomenon. There is no question but that war has complicated the problem. There is, without doubt, a post-war psychology; but the manifestations of that psychology, for the most part, merely accentuate ideas, aims and viewpoints, the development of which dates well back into the pre-war period. In any case, the thing we are looking for is a permanent constructive contribution to industrial stability, and not merely relief from a momentary difficulty.

Industrial relations may be considered from many different angles. Among these I shall try to touch briefly upon the technical, psychological and the economic phases of the problem as a background for consideration of the political or governmental phase. Finally, I shall try to present a constructive viewpoint concerning government policy with respect to industrial relations. This viewpoint will be substantially the one reflected in the recent report of the President's Industrial Conference. To a large extent my remarks will constitute an interpretation of that document.

[1]Address at the annual meeting of the American Academy of Political and Social Science, May 8, 1920.

Technical Organization Inefficient

With respect to the question of technical organization, attention has been frequently directed to the fact that human adjustment in industry has not kept pace with technical equipment. The unhappy consequences of this unequal pace are everywhere visible and cannot be too strongly emphasized. Nevertheless, the fact remains that many of the cumulative irritations that go to make up the large aggregate of industrial unrest hark back to inefficiencies in the mechanical processes under which work is done. In spite of scientific progress, in spite of the attention given to so-called "scientific management," industry by and large is still extremely inefficient on its technical side. Machines are not always well installed, materials are not promptly supplied and properly routed, and workers, as well as employers, undergo loss and consequent irritation from the lack of effective coördination between production management and marketing organization.

A vast amount of thought must still be directed toward the technical side of industry before we can hope for the most constructive results in attacking the human problem. Possibly my experience with the hastily expanded

shipbuilding industry during the war and with the clothing industry since the war, inclines me to draw a picture of technical inefficiency that would be too dismal for application to industry in general. I can only speak from my own experience, but I am within the limits of conservative statement when I say that half of the large number of grievances I have had to consider in the one industry during the war, and in the other in time of peace, arose out of obvious, and, in most cases, easily remediable technical shortcomings.

Aside from those maladjustments that result in a specific grievance, and aside from the direct loss from poor organization, there is a cumulative indirect loss of both product and goodwill. In spite of many assertions to the contrary, workers in general like to feel that their work is an effective contribution towards a definite result. When a business concern is shot through with the crudest sort of inefficiency, when the business process actually creates points of friction, there inevitably results an impression of working in circles and a consequent sense of futility. It is perfectly true that workers themselves create many of these circles. In many concerns an atmosphere is developed in which everyone seems to be working in a circle, and human beings can easily get into a frame of mind in which, for the time being, they have no desire to achieve effective results. Moreover, it is of course true that laying down does frequently result from group action, whether of the smaller group in the individual shop or of the larger organization. In my judgment, however, deliberate shirking in industry over a long period of time is much less common than is frequently asserted, and I am confident that a large part of it could be overcome by so organizing industrial processes that every worker could visualize his own results and could be assured that his achievement was not being neutralized by inefficiencies at other points in the process.

INDUSTRIAL PSYCHOLOGY

The reaction of workers to the quality of technical management takes us into the broad domain of industrial psychology. Probably no group of persons have done as much as the psychologists have done during the past generation in laying foundations for constructive activity directed toward better human relations in industry. I am not a psychologist and shall not attempt to speak as one. It may be in order, however, to suggest, as a layman's views of the question, one or two points at which the psychologists have opened the way for constructive contributions toward industrial stability, and to emphasize the fact that the prospect of such contributions must be given full weight in developing an industrial relations policy.

Thanks to the psychologists, we no longer think of men as dominated by a simple economic motive. We know that action results from a complex of motives, frequently from a complex of conflicting motives. Whenever we undertake to deal with a problem of human relationships, we find ourselves coming up against conflicting ideas, desires and aspirations, ideas that may spring from everywhere and nowhere, and yet ideas that are very real with respect to the particular problem in hand. The psychologists have also rendered a great service to human relations by calling attention to the fact that the situation in which many persons live and work tends to baulk a wholesome expression of normal human instincts, and thus to bring about a destructive anti-social expression of those instincts. Until in some way we

can establish in industry contacts that will respond to normal human aspirations, we shall not have the elements of a constructive industrial relations policy. We must have a working plan that will function from day to day at the point where the worker and the foreman come in contact with each other.

Psychological prerequisites to industrial stability must rest upon an economic foundation. The maintenance of such a foundation involves questions of recurrent adjustment, from which both the parties benefit. As already indicated in referring to the question of technical efficiency, the range within which such mutually advantageous adjustments can be made is much larger than is ordinarily believed. Nevertheless, when all such adjustments are made, there still remains the fundamental question of the distribution of industrial products, and it is idle to deny the existence at this point of a highly contentious problem.

It is the essence of sound industrial relations policy so to meet the technical and psychological requirements of industry that the zone of mutual economic interests may be as wide as possible and the area of conflict correspondingly restricted. Beyond that, it is a problem of statesmanship in industry to provide orderly processes by which contending economic forces may be exerted upon the distribution of the product in such a way as not to destroy or impair the product, either now or in the future.

GROUP INFLUENCE IN INDUSTRY

We have now reached a point of comparative agreement concerning the desirability of establishing within industry opportunity for group expression and group influence, and most careful and impartial students of the problem would extend this expression and influence to the contentious question as to how the product shall be divided. As is well known, great difference of opinion exists as to whether the shop, the concern, the industry or the craft should be the unit of expression. All the controversies concerning employee representation, the craft union, the industrial union and other forms of organization center around this problem.

It is not essentially a part of the industrial relations problem of the moment to reach a decision concerning the relative advantages of these different forms of organization as instruments for expressing the views and exerting the influence of employees. The problem is rather to create and maintain an atmosphere in which each form of organization may be given a fair opportunity to demonstrate its effectiveness to adapt itself to the conditions or the industry in which it operates, and to justify, if it can, its fitness to survive. The idea that in a matter so complex as modern industry, only one form of organization is really fit, and that the process of development is to change all other forms to this model runs counter to all our knowledge of the variation and complexity of human institutions.

THE POLICY OF GOVERNMENT

Recognizing the fact that the problem of distribution is a contentious problem, that actual struggles are taking place and will continue to take place concerning it, what is the duty of government concerning the problem and how may this duty be most advantageously expressed in public policy? Recent discussion reveals four fairly distinct approaches to the question; they may be described with reasonable accuracy respectively, as the socialistic, the paternalistic, the individualistic and the general welfare approach.

Socialism, to the extent of its application in industry, would solve the problem by taking over and operating the industry to which it was applied. No useful purpose would be served at this time by attempting to discuss the merits or demerits of socialism. It should, however, be pointed out that adjustments of technical organization, human psychology and distribution would have to be made under a socialistic as well as under an individualistic organization.

Extreme individualism, as distinguished from socialism, would adopt a thoroughgoing policy of *laissez-faire*. The individualist would restrain the state from injecting itself into the process of adjustment within industry, and he would avoid the establishment of machinery except such as would normally operate under the civil and criminal law. It is interesting in this connection to find Mr. Gompers on the one hand, and the representative of the Industrial Conference Board on the other, taking practically the same position in favor of a policy of *laissez-faire*.

Probably a large number of American citizens today would favor a policy looking much farther in the direction of *laissez-faire* than would have been approved five years ago. There seems to be a general feeling that one of the great dangers at the present time is amateurish, meddling on the part of government officials. When industrial conflict arises, the parties would prefer to fight it out among themselves without interference, and they maintain that in the long run the interests of the public will be better served if this is permitted than it will if public officials act either as umpires or moderators in the struggle.

Interference of the government in industrial affairs was of necessity carried to such a point during the war, and there was, moreover, in the nature of things, such a large element of amateurishness in the way in which hastily organized bureaus and boards performed their work, that the public, momentarily at least, is fed up on government activity, and its first response with respect to practically all problems is to let them take their course without hindrance.

At a time when this general impulse in favor of *laissez-faire* is making itself felt, it is interesting to see one of our American states adopting a policy of far reaching paternalism with respect to industry. The Kansas Industrial Relations Act cannot fairly be called a socialistic measure, since it contemplates government operation of industry only in emergencies in which normal industrial relations break down. It does, however, apply the principle of paternalism over a larger range of activities and makes the government responsible for the continuous functioning of industrial processes to an extent rarely contemplated in a democratic country. The justification for this far reaching invasion of private activity is, of course, the paramount public interest in the continuous operation of the industries that come under the law. These industries are specifically enumerated in the law, and the list is of such comprehensiveness that in an industrial state like Pennsylvania or Massachusetts, a far reaching industrial conflict might bring a large part of the wage earners of the state under government jurisdiction for the earning of their daily bread.

The Kansas law not only makes strikes and lockouts illegal, but it also provides for the taking over and operating of any of the specified industries in which industrial relations are interrupted to the point of interfering with private operation. The Kansas law

has called forth much praise from employers, but the part of the law chiefly emphasized in this connection is that which prohibits strikes and lockouts. Few people apparently understand the far reaching character of the law. It is difficult to see how such a law could become practically operative in an industrial state. As a piece of economic experimentation in a state in which industrial conditions are comparatively simple, the law will doubtless serve a useful purpose. Even its enactment, without reference to its practical operation, has helped clarify the discussion of industrial relations.

Without adopting the extreme paternalism of the Kansas law on the one hand, or extreme individualism on the other, there appears to be a fairly clear field within which government may exert its influence with a prospect of securing useful results. Assuming that technical, psychological and economic adjustments in industrial relations must be worked out internally, it would seem to be the part of wisdom for government to base its policies upon a frank recognition of this fact, and confine regulation to measures essential to an orderly process of adjustment and to the protection of general interests. This was in essence the viewpoint upon which the recommendations of the President's Industrial Conference were based.

Much has been said, on the one hand, by way of asserting the paramount public interest in industrial conflicts and, on the other, by way of denying the danger to such interests, and even of questioning whether there is such a thing as a public interest distinguishable from the interests of the parties whose relations are directly at stake. Confusion in this connection arises primarily from trying to consider the question in the abstract. With respect to any concrete situation, there is always a vastly greater number of people standing on the side lines than are directly engaged in the conflict, and the fact that the people on the side lines may be engaged in a similar conflict tomorrow in no way makes them less a part of the public with respect to the conflict today. We all have a natural and proper desire to have our legitimate interests protected when other people are in conflict, and we ought at the same time to acknowledge the rights of others to protection when we ourselves are in conflict.

Accepting the fact of a substantial public interest in industrial relations on the one hand, and a confirmed skepticism of extreme government interference on the other, constructive statesmanship will adopt a middle of the road policy. Under such a policy, it will seek to protect essential public interests while avoiding dangerous undermining of individual rights and the meddlesome annoyances of an amateurish bureaucracy.

The protection of private rights proceeds along two lines. From one point of view the individual is safeguarded in his economic relations by all of those laws, decisions and regulations by which the police power of the state has been expanded to preserve the health, morals and comfort of wage earners under modern industrial conditions. The net result of such laws is to fix a minimum level upon which competition, whether between employers on the one hand, or between the employing and the wage earning groups on the other, must be carried on. This phase of public policy with respect to industrial relations need not detain us here, since the principle of compulsory minimum standards has been universally accepted. The only discussion in connection with specific measures of this sort pertains to their

expediency in the particular circumstances.

The President's Conference called attention, in part four of its report, to the principles which it believed should underlie legislation in certain branches of police power regulation. It also called attention to the need of strengthening and coördinating present legislation along several lines. Laws pertaining to such subjects as hours of labor, child labor and women in industry are merely a part of the general industrial code, and do not primarily change the fundamental relation between employer and employee.

In addition to its police power regulations, the government performs a useful and necessary informational service. The introduction to the report of the President's Industrial Conference contains this language:

> The wisest suggestions for the prevention and relief of industrial unrest are to be found by interpreting the best thought and experience of those employers and employees who, within the area of their own activities, have most successfully dealt with the problem.

Obviously, the results of practical experience in dealing with industrial relations cannot bear fruit except to the extent to which these results are known. Wise public policy will provide for expanding the informational service of the government in this field to the fullest extent compatible with careful, impartial, scientific collection and dissemination of significant information.

Discussion of informational service naturally suggests informing the public with respect to specific industrial conflicts when they arise. The fact that such conflicts arouse intense feeling differentiates the problem of giving information concerning them from that of the general informational service. Information given to the public in connection with industrial disputes furnishes the basis for public opinion concerning those conflicts, and in this way has a direct influence upon the issue. For practical purposes, then, the question of information merges into the general question of aiding in the adjustment of the conflict, and its discussion becomes a part of the general discussion of arbitration, conciliation and mediation.

Arbitration may be either compulsory or voluntary. It may be general or restricted to specific enterprises. Compulsory arbitration has been tried under varying circumstances during the past generation, and it has not commended itself by its results to thoughtful students. Conciliation and mediation have been more successful, but the results have usually depended upon a fortunate personality. Experience seems to indicate that the two things which public agencies may undertake with a fair prospect of success are: first, judicious information of the public concerning the issues of a dispute; and, second, provision for tendering the good offices of some properly constituted arm of the government to the end of bringing the parties in conflict together. The methods devised by the President's Conference for putting these ideas into practice are set forth in the following quotation from the introduction to its report:

> The system of settlement consists of a plan, nation wide in scope, with a National Industrial Board, local Regional Conferences and Boards of Inquiry, as follows:
>
> 1. The parties to the dispute may voluntarily submit their differences for settlement to a board, known as a Regional Adjustment Conference. This board consists of four representatives selected by the parties, and four others in their industry chosen by them and familiar with their problems. The board is presided over by a trained government official, the regional chairman, who acts as a conciliator. If a unanimous agreement is reached, it results in a collective bargain having the same effect as if reached by joint organization in the shop.

2. If the Regional Conference fails to agree unanimously, the matter, with certain restrictions, goes, under the agreement of submission, to the National Industrial Board, unless the parties prefer the decision of an umpire selected by them.

3. The voluntary submission to a Regional Adjustment Conference carries with it an agreement by both parties that there shall be no interference with production pending the processes of adjustment.

4. If the parties, or either of them, refuse voluntarily to submit the dispute to the processes of the plan of adjustment, a Regional Board of Inquiry is formed by the regional chairman, of two employers and two employees from the industry, and not parties to the dispute. This board has the right, under proper safeguards, to subpoena witnesses and records, and the duty to publish its findings as a guide to public opinion. Either of the parties at conflict may join the Board of Inquiry on giving an undertaking that, so far as its side is concerned, it will agree to submit its contention to a Regional Adjustment Conference, and, if both join, a Regional Adjustment Conference is automatically created.

5. The National Industrial Board in Washington has general oversight of the working of the plan.

6. The plan is applicable also to public utilities, but in such cases, the government agency, having power to regulate the service, has two representatives in the Adjustment Conference. Provision is made for prompt report of its findings to the rate regulating body.

The Conference makes no recommendation of a plan to cover steam railroads and other carriers, for which legislation has recently been enacted by Congress.

7. The plan provides machinery for prompt and fair adjustment of wages and working conditions of government employees. It is especially necessary for this class of employees, who should not be permitted to strike.

8. The plan involves no penalties other than those imposed by public opinion. It does not impose compulsory arbitration. It does not deny the right to strike. It does not submit to arbitration the policy of the "closed" or "open" shop.

The plan is national in scope and operation, yet it is decentralized. It is different from anything in operation elsewhere. It is based upon American experience and is designed to meet American conditions. It employs no legal authority except the right of inquiry. Its basic idea is stimulation to settlement of differences by the parties in conflict, and the enlistment of public opinion toward enforcing that method of settlement.

Taken in conjunction with the sections on employee representation and on collective bargaining, the suggested plan leaves the great issues underlying the employment relationship to be worked out by the parties to that relationship. The Conference recognized the bearing of the technical, psychological and economic elements of the problem, to which reference was made earlier in this paper. It proposed to influence, but not to prevent the working out of these reactions. The sobering effect of public observation and public judgment will tend to rationalize the positions taken by both parties when conflicts develop. The moderation thus encouraged will in general, it is believed, make conciliation welcome when conflicts assume dimensions that jeopardize the public interests. In any case, the knowledge that the public has a right to know the issues will itself constitute a substantial protection to the public.

In conclusion, the whole trend of recent developments in industrial relations goes to show that the problem is not one to be dealt with by mechanical contrivances and formulas. Its solution must be reached by a process of organic growth. The public may watch this growth. It may cultivate the soil in which it takes place. It may set limits within which it shall occur. But, it cannot promote industrial stability by trying to take the problem out of the field of natural economic relationships and transplant it bodily into the field of public policy. The most essential safeguard to public interest is the avoidance on the one hand of hysterical and ill advised regulation, and on the other, of the detached and fatalistic inertia of *laissez-faire*.

Reaching the Mainsprings of the Wills of People

By Arthur J. Todd

University of Minnesota (on leave); Labor Manager, B. Kuppenheimer and Co., Chicago, Ill.

TO the industrial relations manager, as to the university teacher, there are three fundamental objectives and genuine satisfactions in life: to unlock the imagination of the student or the worker; to tap his creative and productive energies; and, both as a means to the other objectives and as an end in itself, to win and maintain the reputation for fair dealing. These are the locks, but what are the keys which will unlock the stores of imagination and productive energies, or which will open up the way to reach the mainsprings of the wills of the workers?

Will-Power Versus "Won't"-Power

Production is always a matter, not only of technical ability or muscular power and health, but, more than all these, of willingness as well. The great difference between slave or prison labor and free labor is just this matter of willingness, spontaneity, freedom. Very much has been said of "will-power" in recent times by fake psychologists. We are told that it is possible to train will-power just as it is possible to strengthen memory and certain other so-called "faculties" of the mind. But how are we going to create will-power if the scientific psychologists are right in telling us that there is no such thing as will? The problem would be immensely simplified if we could isolate some mental faculty called will just as we can isolate the appendix or the pituitary gland and perform an operation on the one or feed the other; but apparently there is no will gland or brain tract labelled "will." The trouble is that the human will is simply the dynamic aspect of the whole human personality; that is, it is human character in action; therefore, a very complicated affair.

We are all complexes, a mass of perhaps thousands of unit characters which go to make up the whole thing we call the human personality or the human character. Nobody, however, includes in his make-up every element in a perfect formula. At least we all represent individual emphasis upon certain characteristics that may be common to all people. The strata in our character topography run thin or thick, according to certain more or less understood principles of heredity, early training, education, etc.; or, put in another way, our mixture, that is, our character force, may run lean or rich, according to season, and according to certain conditions of our social atmosphere. Anybody who has ever driven an automobile knows that he gets more power on a moist day. Just so human character, on its energy side, responds to certain subtle elements in the environment.

Since will is fundamentally ideas in action, the great problem of evoking will-power is how to create an atmosphere in which ideas will bloom. If it is will-power, willingness, that we want, instead of "won't"-power, the power of negation and obstruction, we must first learn to drain off the morasses of fear and suspicion which have been allowed to gather about industry. Would it be stretching a metaphor to say that part of the remedy for "won't"-power is the providing of just the proper balance

of emotional humidity and intellectual dryness?

An accepted principle in sociology is that men are ruled more by their beliefs than by laws. It is commonly assumed that the average run of people have certain fundamental "interests," and that the whole social process is simply the interplay of these fundamental interests struggling for recognition. The simple fact of the matter is that absolute interest does not determine human conduct. It is rather what a man believes his interest to be that determines him. Since motive and belief depend in part upon information it is important at the very beginning of analyzing this problem of the human element in industry to recognize the inexorable necessity of telling the truth, of dealing in "pure facts," just as we insist upon pure food, pure water, pure milk.

"Won't"-power is the product not only of faulty information, but also of balked instincts, of suspicions and repressions, of ingrowing grievances, which result in a whole string of pathological manifestations. Frequently the trick of transforming "won't"-power into will-power is performed simply by opening the valves of expression and by allowing, encouraging, or all but compelling the person to get his suppressed emotion or suspicion or fears or jealousies or hallucinations out of his mind. For this reason, if for no other, grievance committees, shop committees, personnel departments, and impartial machinery, to which the workers have access and freedom to state their grievances, are of enormous value quite apart from any theoretical consideration as to their bearing upon some ideal industrial democracy. The English long ago learned this value of the safety valve, and any Sunday in the year you can see it working in Hyde Park or Victoria Park, where cranks almost without number are spouting their grievances. Such freedom of speech and of assemblage, which is the heritage of English and American democracy, is absolutely sound in its application to industry, and particularly to the problems of production. This does not mean that shops are to be turned into debating societies or that forensic eloquence is to take the place of mechanical skill. There are workers, of course, who, like Mark Twain's Mississippi steamboat, cannot whistle and turn wheels at the same time, but for the most part it is safe to say that the feeling of freedom to express one's grievances carries over somehow or other into free action for the whole personality—muscular and mental.

A simple example will illustrate how people are dominated by beliefs, no matter how foolish the beliefs may be. One of the most troublesome things in the clothing industry is buttonhole twist. At certain times it is difficult to get twist of uniform quality, even though the trade designations and numbers remain nominally the same. Sometimes twist on the outside of the spool is of a different thickness from what it is at the center of the spool. In a tailor shop sometime ago a protest was made by the buttonhole makers against their twist. They claimed it was of finer quality than customary and therefore made their work harder. This twist was on white spools. An ingenious superintendent conceived the idea of rewinding it on red spools. When he presented it to the workers they accepted the red spools without question and were altogether happy in their work. I do not underwrite either the ethics or the esthetics of this episode, but simply cite it to illustrate how facts are frequently no match for beliefs in dealing with human beings.

WHY DO PEOPLE WORK?

Before we can get any farther toward touching the will-to-produce of the average worker we must be able to answer the question of why people work. If you ask the average man why he works he will say, "Why, because I have to," "Because if I did not work I would starve to death," "Because I have a family to support," "Because I need the money," or for some like substantial reason. Joseph Lee, in his *Play in Education*, answers the question of whether we can ever get away from fear of hunger as a production motive by insisting that even genius waits upon the hunger motive; yet he warns us against taking the whip for the horse, and against confusing a penalty upon idleness with the power to act. If, however, we get away from the hunger motive as the primal impulse to work, we run into a rather vague mass of motives which have been frequently lumped together as economic or productive instincts, or at least as instincts which bear upon the production problem. Professor Irving Fisher, in an earlier number of *The Annals*, has analyzed seven of these major instincts which industry ought to satisfy, namely, self-preservation, self-expression or workmanship, self-respect, loyalty, love or home-making, worship and play. He does not work these out in equal detail, nor with equal convincingness, but it is quite evident that some of them are brought into play with the average worker.

THE ACHIEVING IMPULSE

It is perfectly true that the creative impulse, the full impulse to good workmanship and self-expression in the job are not encountered, yet we find in all industries and amongst all ranks of workers men who are genuinely interested in their jobs, men whom the problems of their jobs really attract, men who work at their problems outside of working hours and do not actually stow away their interest in the job with their tools at the end of the day. Management should see to it that this *problem interest* is not overlooked in the machinery of selection and promotion, nor should it neglect the function of rotation on the job as a means of keeping the worker's mind full of new problems. The ideal state of mind for the worker is the state of mind which marks the real professional man, namely, that his whole working life is an apprenticeship directed towards the satisfying of what Joseph Lee calls the "achieving instinct." Indeed, I think perhaps the whole relationship between a profession and ordinary artisanship is summarized in the idea that a profession is work taken seriously. If the worker can be led to take his work seriously and has been given the proper industrial technique we need not worry about the problems of production. Of course that process of getting him to take his work seriously would involve his thorough initiation into the whole inner meaning of his job, its relation to all the other jobs in his shop, the relationship between his shop and his industry to all the other industries; in other words, it would mean opening up the mind of the worker to his responsibility as a contributory citizen in industry.

LOYALTY

There is undoubtedly in all men some sentiment of native loyalty. The most disgruntled worker retains some shreds of pride in his shop or his company. Even prisoners will shout for the home team. Loyalty to a union or some other organization by no means crowds out the loyalty of a worker to his shop, and in spite of hostile teaching employees will speak of "our shop," "our bank," "our company." It is re-

lated that a junior member of a large manufacturing firm, who was working his way through the shops in the process of learning the business, appeared one day before the impartial machinery where a question involving the shop in which he was working was being considered. After the case was heard and decided he came into the room and said to the union business agent who was conducting the case for the people, "Say, J., did *we* win?" This same unconscious, almost instinctive loyalty which made one of the bosses merge his indentity with that of the workers in the shop is a subtle indication of how the streams of loyalty tend to flow unless their course is wilfully diverted. But because of the profound nature of this stream industrial managers must be very careful not to overplay loyalty, nor substitute it for real justice. There has been grave resentment recently throughout the world against such monarchic phrases as "my royal troops," "my brave soldiers," or against such autocratic designations as those laid down by a recent great street railway president who advertised to the public the fidelity of his "loyal servants," meaning the street car conductors and motormen. This degradation of the loyal impulse by feudal absolutism must not be confused with the free loyalty inspired by a democratic ideal and fair dealing.

There are certain characteristics in human nature, call them motives or interests or what you will, to which an appeal may be made with good chances of successful production response. There is that somewhat vague thing which we call a sense of common decency. Of course some men rejoice in an attitude of splendid sinfulness, but, for the most part, men want to be decent, and when absenteeism or tardiness of loafing is presented to them as an offence against common decency and self-respect they will usually agree and attempt to make amends. A sense of artistry, of real pride in work can be evoked and developed. An appeal to fair dealing, in which all parties to a dispute lay their cards face up on the table and tell the truth absolutely will almost invariably hit the mark. A particular case will illustrate this point. A man was brought before me on suspension some weeks ago by the director of one of our lunch rooms. He had taken an extra dish of fruit and poured it into the one which was commonly served with a meal, and tried to get away with it without payment. He was checked, began to dispute, and finally threw the dish on the counter, incidently slopping the food all over the place. His tray was taken away from him and he was suspended from his job. He admitted his fault readily enough, but real conviction struck home in him only when I took out of my files the complete financial report for that lunch room and showed him the red figures which indicated the weekly losses which the firm suffered in its efforts to provide a wholesome meal for the workers. He then saw how every slight item of waste added to that column of losses. He got the point at once, shook hands, and went back not only safeguarded from repeating his offense, but also lined up as an understanding employee whose production record will not suffer because of nursing a personal grudge or harboring a suspicion that the firm was profiteering in its lunch service.

Whether these various impulses are instincts or not, or whether there is really any such thing as instinct or not, there are undoubtedly certain underflowing mainsprings of behavior, certain well directed channels through which life's energies normally flow. I have hinted at some of these channels. The genius of the labor manager

will be tested by his ability to map out human topography in such a way as to reveal clearly not only the general watershed but also the particular channels.

SCIENTIFIC MANAGEMENT PLUS SCIENTIFIC EVOCATION

Scientific management has been criticized primarily because thus far it has focused itself mainly upon the handling of materials rather than the handling of men. Where it has fallen down in the handling of men is primarily that it has not yet reached out beyond the two chief incentives of wages and promotion in the effort to line up men for efficient production. The wage stimulus of scientific management is, as we have already indicated, only a small part of the possible motivations, interests, and stimuli which must be applied to secure the wholehearted response of the workers. The appeal to produce and to take responsibility have, as Helen Marot points out, "never reached the consciousness of working men for the reason that it is impossible to feel responsible or to be responsible where there is no chance of bearing the responsibility." Miss Marot further charges that the great defect of scientific managers is that they have failed to distinguish between initiative and short-lived reaction to stimulus. She herself overlooks, however, the very simple psychological fact that no one stimulus, no matter how vivid or pressing, can hold the attention and interest of any one of us for more than a short time. No matter how inherently attractive the particular problem or job, sooner or later interest flags. For this reason, and also because scientific management is still young, all we can say is that the art of industrial motivation is still in its rude beginnings. Because modern civilized man is a very complex being, because industry is a very complex thing, and because interests and attractions engage in such fierce competition the most astute generalship and fine sense of discrimination have to be used in this process of evocation.

PRODUCTION FOR PRODUCTION'S SAKE

Sooner or later in the production game we are brought up with a round turn against the worker's frank, sometimes brutal question, "Produce? Turn out more work? Why should I? What's the use? If I work more I simply work myself out of a job or line the bosses' pockets"; or, "I have got enough anyhow; I don't need to work any more." This gets down to bed-rock. Why, after all, should men produce? Is there any virtue in producing for production's sake? Of what value is it, once you get away from certain fundamental articles of food, clothing and shelter, to make more units of a certain kind of stuff? I am frank to say that if I were a worker, turning out some of the cheap gimcrackery that is made just to sell or play with, and which fits no fundamental human need, I should answer that the only reason which would lead me to produce would be to get more for myself. I am equally frank to say that I can see no way of getting over to the workers the full stimulus to production until they are convinced that the world is suffering from a lack of production of certain basic commodities, and that they, as partners in industry, are responsible for furnishing those commodities. Sidney Hillman told the City Club of Rochester a short while ago that "to get more production, not only for one year, but for always, the worker must have a feeling that he has a citizenship in industry as well as in the political state." That is to say, the worker must understand that in

reality and in truth he is a responsible citizen who is charged with helping to fulfill some great fundamental demand of the people; or, to put it in another way, that he is helping industry to perform a public service. That is, citizenship in industry means not just voting one's self more pay, not just receiving certain benefits through collective action; it means responsibility and some measure of self-determination and self-expression. No technical arrangement of business nor juggling with piecework or weekwork or production standards or bonus systems will get anywhere in the long run unless this fundamental question of creative responsibility is first answered and answered frankly and fairly. Failing that, satisfactory answer pressure for output on highly specialized and subdivided lines may really defeat itself. It is possible to stage routine so as to make it interesting and productive for the time being by applying scientific principles instead of mere rule of thumb, and speed competition teams may succeed for a time; but permanent success can only come if the workers understand the point of this speed, if they are taken into confidence in production plans, if, instead of standing baffled before meaningless production "they are made conscious participators in the creative process."

ACTIVE VERSUS SILENT PARTNERSHIP

These questions finally reduce to working out some method by which active partnership and responsibility can be assumed by the workers. Some people thrive through the investiture of authority. They court responsibility and develop new capacities under it. Many, however, dodge it, wanting merely to be let alone and to acquit themselves of the day's routine. But even the most casual worker, the most irresponsible, can be brought to some sense of responsibility toward fellow workers if the proper educational attitude is taken by management, personnel workers, and labor leaders. For example, in a highly sectionalized industry, like the garment industry, it is possible to appeal say to the cutters and trimmers to work overtime, or to sacrifice themselves to a greater or less degree for the sake of keeping a steady flow of work to their fellows in the tailor shops.

It must be borne in mind that merely joining a union will not accomplish, as it were, by baptism and laying on of hands, this sense of responsibility. In two thousand years members of the Christian church have not yet seized upon the full inner meaning of the doctrine of the mystic body, or of the communion of the saints. Hence, every opportunity must be taken in dealing even with organized workers to point out that membership in a union means something more than simply sitting down and accepting all that the union can secure through collective bargaining and the force of numbers. Union membership means real team work; it means real responsibility for fellow members; it means mutual aid on the job as well as mutual aid through strike benefit assessments. It is true that actual participation in the making of labor agreements, and in the administration of those labor agreements as they have been worked out in the clothing industry, tends to create a greater sense of responsibility in the minds of workers. But while much of the burden falls upon modern industrial management for these lessons in responsibility, a very large burden rests also upon labor leaders. They must learn to take the workers into the fullest confidence, just as employers must, in order to give this sense of active and not merely silent partnership, and in order to enable the workers to see the

whole productive process and not simply their own small jobs. If we cannot give the worker an aeroplane view of the economic landscape, nor even a stepladder view, at least we must provide him with a footstool glimpse.

This sense of responsibility in industry, it is safe to say, will never be achieved through warfare. It can only come as the fine flower of long range, broadly conceived, educational effort. You can never make a partner of a man by fighting him or neglecting him. Men cannot shake hands while balancing chips on their shoulders. There is a tendency, particularly in industries struggling to adapt themselves to working with organized labor, for the foremen and other executives to keep their decks cleared constantly for battle, to keep their eyes open for holes in the enemy's defenses, to dispute, and to fight over petty questions of authority and jurisdiction, to be abnormally sensitive to slights and to affronts, or, on the other hand, to be extremely timid about taking a stand upon some principle of right for fear of spilling trouble. This aggravated bumptiousness, or this shell-shock fear, are not promotive of productive energies. Only a clear purpose to let bygones be by-gones, to forget old scores, to bury the hatchet, and to shake hands in a new coöperative order, will bring about that pulling together which is essential to shop discipline, shop order and productive efficiency.

HEALTH AND PRODUCTION

Among the fundamental human interests recognized by some sociologists is the dominating interest in health. Now, health, from the standpoint of production, means not only physical health and therefore a desire for good physical working conditions in the shop, but it also means even more—healthy-mindedness. It was particularly this aspect of the health motive which was so conspicuously lacking at the recent convention of the Industrial Relations Association of America, but which was emphasized very clearly at the last National Conference of Social Work. Safeguarding the physical health of employees through physicians, nurses, rest rooms or treatment stations, acts very much as medical missions do by way of creating good-will, provided of course there is no taint of welfaring, and provided the health staff are really warm human beings. Good working conditions which promote both physical and mental health make a real appeal to the worker, and he will frequently renounce higher pay for the sake of such decent working environment. But good air, good light, good toilet facilities, and these other physical minima have after all only comparatively slight purchase upon the worker in the direction of creating healthy-mindedness. That healthy-mindedness can only be evoked by removing a sense of being thwarted, by providing against baulked instincts, by satisfying the normal impulses of the individual for self-expression, by removing such old fears as the fear of unemployment, the fear of arbitrary, wilful discharge, the fear of humiliation, the fear of underhanded, malevolent action of enemies, the fear of having something slipped over by the bosses, the nameless undefined fears stirred up by irresponsible spoken and written propaganda. Only education, telling the truth, taking the workers into confidence, making them participators in fact as well as in name, giving them a real voice in management, will bring about this healthy-mindedness. And, without getting into metaphysical or therapeutic discussion, it is pretty safe to assume that with mental health

will come physical health and the releasing of unsuspected creative energies.

FAITH VERSUS FEAR

It would be very profitable from the standpoint of the whole problem of production to analyze more exhaustively this problem of fear. I am convinced that the greatest single hamper upon production is fear, whether in the mind of the employer or the employee. Too often in the past, and even in the present, fear has been made the main whip to production. But fear is a very unstable and incalculable stimulus or motive. It may result in a steady though not very high nor long range output. It may produce high spurts of production; but it is more likely to cause a drop in production, for the simple reason that physiologically speaking fear constricts rather than releases energy. It introduces toxins into the system which poison and corrode both body and mind. Moreover, as Graham Wallace points out, people sometimes deliberately cultivate the emotion of fear in these rather tame times of ours in order to take a plunge back into the primitive. They will take a dare or "try it on"; they will run risks deliberately; they will "monkey with machines," or they will twist the tail of the foreman, just to see what will happen. There are daredevils in industry just as there are in military life or the movies. Consequently, you can never count on the effect of "shooting a scare" into people. There is, just at the present moment, one particular fear which must be removed before we stand the best chance of increasing production. Recently the pendulum swung far in favor of labor. Now it seems to be slowly jiggling back in the other direction. With that backward swing, an attitude of trying to get even is almost inevitable on the part of the ill-educated employer. To get real coöperation in production, therefore, it will be necessary to remove all fear of reprisals by the boss or the foreman. If you can prove to the worker that there is no danger of taking advantage of him when he is on the defensive you are likely to get down to real facts and stand a good chance of uncovering an assumed apathy or hardness, and of breaking through the crust and releasing the real interest, loyalty, sympathy and good-will of the worker.

The necessity for appealing to a sense of solidarity and of duty in this business of getting the full productive coöperation of the employee merits further emphasis. Both management and men must learn that every privilege, either industrial or social, is coupled with a duty, that men cannot receive benefits without giving something in return. I have found that this problem crops out in every single case of discipline that I have ever had to hear and administer. People were perfectly willing to enjoy the station whereunto God had called them, perfectly willing to receive the benefits which their union leaders showered upon them, and were content to let it go at that. It has been necessary repeatedly and very pointedly to perform the operation of stitching up the slit between duty and privilege so that every person connected with the industry felt that that industry was more or less organic in nature, and that every person was something more than an atom, or a brick in a heap of bricks, that he was really a vital element, somewhat in the nature of a cell, in that larger organism. This sociological teaching is the responsibility of both management and of labor leadership.

THE LONE HAND

Frequently personnel managers have found that men were falling down in

their production, not because of fears and jealousies or grouches against management or against fellow workers, but for some vague and unnamed trouble. This trouble when analyzed (or perhaps psycho-analyzed) proved to be a case of trying to play a lone hand, the result of feeling that the whole world was against the individual, or that every hand was turned against him. I have found cases of this sort which reduced simply to terms of loneliness, friendlessness, more or less of the type which Carleton Parker described as the "homeless, friendless, jobless, womanless man." When such cases are treated fairly and intelligently without any smearing over of welfaring, but through the simple process of demonstrating that a friendlier attitude is likely to beget friendly response, mental health and therefore economic health is restored and maintained. Employment managers have worked out various methods of introducing the new worker to his job and of following up the new worker upon his job during the first few critical days after he is hired, but the personnel manager must be on the lookout for these more subtle cases of profound loneliness, as displayed by workers of retiring, unassuming dispositions. The task of being a friend and of providing friendly contacts is the best specific in such cases.

SAVING ONE'S FACE

In workshop or business office situations arise daily, the wise handling of which has an enormous bearing on labor turnover, good-will and production. They may concern mistakes, breakages, contradictions as to supposed matters of fact, petty questions of prestige, jurisdiction or authority. It may be a question of how to get rid of a shop foreman or a recalcitrant union official employed in a shop. It may be that circumstances necessitate a sudden change of policy or shift of personnel in the face of an unyielding stand on former policy. But whatever the particular form of the issue it usually conforms to the classic puzzle of an irresistible force meeting an immovable object. Something or somebody must move. At this point comes in genius for handling men. That genius consists in saving the faces of the contending parties without sacrificing any essential principles. It is flexibility of mind, resourcefulness, sense of humor and tact. As Keynes points out in his *Economic Consequences of the Peace*, "A moment often arrives when substantial victory is yours if by some slight appearance of a concession you can save the face of the opposition or conciliate them by a restatement of your proposal, helpful to them and not injurious to anything essential to yourself." This attitude of mind stimulates production—whether of treaties of peace or rubber tires or clothing. It is diplomacy at its best and leaves no scars.

I want to reiterate the point already made, and a point which came out very clearly day after day during the recent Industrial Relations Convention. This is the principle laid down by great sociologists like Lester F. Ward and by industrial engineers like Robert B. Wolf, namely, the necessity of recognizing the curative properties of knowledge and truth. It is particularly important at this period of what looks like an industrial slump that the rank and file of the workers and the foremen too be told the plain facts about business. If we took the trouble to check up with some of the workers we should be astounded at the distorted ideas which they have with regard to total production, costs of production, sales, profits or salaries of management. It is much better to have these facts brought out frankly in friendly confer-

ence than to have them ferreted out by stool pigeons or guessed at by fearful, uninformed minds. And it is safe to predict that the truth will not slay all productive interest but will stimulate and invigorate it. Evasiveness or mole-eyed secrecy is the refuge of scared or deluded autocracy. Napoleon once said of the French: "Give them baubles—that suffices them; they will be amused and will let themselves be led, so long as the end toward which they are going is skillfully hidden from them." Such was the flimsy and dangerous doctrine which led inevitably to Saint Helena. There is another aspect of this matter of telling the truth. A man will respect another man who calls his bluff or sees through his cheap pretense, but who at the same time has a sense of humor and refuses to humiliate him. A sense of humor in the service of truth is worlds removed from the old idea of "jollying the workers," and comes as near being a sovereign remedy as men can ever expect.

WELFARE WORK AND PRODUCTION

Too often industrial managers have placed naïve faith in welfare work as a means of "reaching people"; but as a long history of strikes, ill-will, suspicion, and impaired production have shown, welfare work, as too often conceived, is about the last thing in the world that will really call forth the productive energies of men and women. Two steps are necessary. First, stop thinking of welfare work as some benefaction conferred upon the workers. Think of it primarily as simply the minimum standards of decent working conditions. There is no more reason why an industrial manager should take credit for having installed a lunch room, or health department, or recreation center, and expect hero worship from the employees to result from those additions to working conditions than he should expect the "Thank you, kind sir" of the comic opera in return for having put in decent ventilation, liberal window space, heating, artificial lighting, or smooth running machinery. Second, the suspicion must be removed that welfare work or the shop committee or company union is just a stop-gap or an undesirable substitute for something that the people really want more or to which they are entitled. After this suspicion is removed the management is likely to get support and whatever increment of production might be expected to come from improvements in the physical and mental environment of the shop. It must be remembered, however, that any such increments will come unconsciously and more or less automatically. Therefore the management must not be disappointed if no conscious expressions of gratitude are in evidence. Industry must be content with the more subtle expression of the effects of sound management.

It would appear, then, that human topography shows certain elevations and areas and channels other than those commonly associated with what we recognize as response to financial incentives in production. Human behaviour favorable to production can be touched off by motives other than those of money. Yet having said this we must not be misunderstood as saying that the other impulses in human nature, such as loyalty, team-work, or curiosity, or emulation, should be fed up or overplayed at the expense of fair and generous wages. The secret of sound management is to keep all the channels of normal human impulse free and open, to utilize them all, and to reward them.

Organizing the Shop for Production

By R. L. Cornick

Representative of the Workers, Arsenal Orders Branch, Ordnance Dept., U. S. A.

IT was made apparent during the war that labor has an unlimited capacity for team work in the attainment of worthy objectives. The fact that the workers have demonstrated their willingness to coöperate for the purpose of effecting more economical production, provided their interests are safeguarded, has never been questioned, but in organizing the human forces for production the point is always reached where it is agreed that production can be increased and savings in energy and material brought about through coöperation. It is at this point that the employees naturally raise the question as to the disposal of the savings which accrue as a result of closer coöperation. Their contention is that since coöperation is a thing that must be given of the employees' own volition they control the situation to that extent and they must have a very definite objective if they are to agree to enter into any proposition for increased production and they insist that this objective is the equitable division among capital, labor and the public, of the savings brought about through joint effort.

Basis of Coöperation

Labor recognizes that material progress is dependent on the advantage taken of every opportunity that tends to increase efficiency in industry, but it is also aware that increased efficiency in production of commodities is useless, if, instead of giving the consumer the benefit of the resultant savings (thereby augmenting the demand for the commodity) capital appropriates the savings and increases its profits. However, once the question of division of the product of industry is fairly settled, the consciousness of antagonism, distrust and fear which exists between employer and employee will be dissipated to be replaced by mutual confidence and coöperation. This can be best accomplished by the establishment, through mutual agreement, of a basis on which to work, which will give just consideration to the rights of all parties at interest.

The first fundamental principle that must be recognized is labor's right to share in the control of industry by representation in proportion to its basic interest.

There was a period during the development of political democracy that being a property owner was one of the qualifications necessary to the securing of political representation, and in the industrial sphere today ownership alone entitles an individual to representation, even though it be admitted that labor and the public are vitally interested in the conduct of industry.

Limiting the voice of labor in the control of industry to matters of shop discipline, wages and hours (themselves mere incidents to decision of policy) will not effect full coöperation, for the method by which a business is conducted often automatically determines whether or not the undertaking can insure to the workers a proper standard of life and afford opportunities for development. Furthermore, unless the workers are given a share in the responsibility for carrying on industry, it is practically impossible for

them to consider questions of wages and hours in the broad practical sense. A full understanding of the economic position of the industry alone will enable them to form trustworthy judgments on such questions. Labor insists, and with justice, that it must be placed in a position of equality with capital before the possibility of partnership can be created.

METHODS OF SCIENTIFIC MANAGEMENT

Among many of the methods adopted by capital to bring about more economical production are labor saving machinery and so-called "scientific management." Both methods present unlimited vistas for service and abuse. They are used by employers and management to make capital yield a higher return. However, it is conceivable that these same methods, if properly applied and if the benefits that accrue equitably were divided among capital, labor and the public, would increase the utility of articles being manufactured, stabilize employment and offer greater opportunities to the public for consumption. Labor sees in labor-saving agencies and machinery factors vitally affecting its immediate employment. It is certainly not reasonable to expect labor to coöperate in carrying out a program that might bring into existence a growing class of unemployed, or coöperate in the administration and furtherance of a system that lessens the self-respect and undermines the independence of the worker by making his work more and more mechanical. This would result in the worker losing the opportunity of exercising his natural instincts for self-development by initiating action and doing creative work unless, through its position of joint control of industry, it is able to insure that when labor is displaced by the introduction of labor-saving methods or machinery, society would carry this burden until labor could form new industrial connections. Then agreement can be reached concerning the rate at which new inventions are to be introduced and the conditions under which they are to be worked, as well as the disposition of the men, if any, who are displaced.

WORKER'S FITNESS TO MANAGE

Because the worker has had no experience in problems of finance or management does not signifiy that he is not rightly interested in such problems any more than because management has not had experience in actual production signifies that the management is uninterested in production. To establish coöperation, each of the parties to industry must be taken into the confidence of the other so that proposed changes can be sympathetically considered and their social and economic consequences properly weighed.

So long as the primary object of industrial undertakings is profit instead of service, so long as the power to establish policy is solely in the hands of those who wish to get as much out of labor and the community as is obtainable for as little as possible, there is no possibility of stopping the social waste caused by the strife and antagonism of our present industrial system.

The parties now unrepresented in industry are developing powers quite rapidly and are working into a position through organizations of producers where they can effectively demand that their rights be recognized, all of which indicates that a people intellectually free will not submit to economic slavery.

The parties to industry which have representation do not avail themselves of this representation to work on a partnership basis with the end in view of promoting the common interest, but each party speaks in terms of its

power to injure the other, thereby also injuring the community.

The legal control which is now vested in the employers through ownership should be considered in the light of a legal power held in trust to be administered to the best interests of the community. It naturally follows that none of the parties contributing or interested in the successful conduct of industry should be deprived of a means of safeguarding their inherent rights.

It is of no avail to call attention to the legal rights of the parties now in control of industry, for no matter what their position is before a law that holds property rights above human rights, labor and the community are not without rights in equity based on justice and good faith. The solution of our industrial problem, therefore, seems to be a recognition of the equitable rights of all parties at interest.

That is why joint control of or democracy in industry as a fundamental principle underlying government in industry is absolutely necessary before the common interests of all can be emphasized and common aims made clear to the end that the feeling of suspicion, antagonism, coercion and fear gives way to one of confidence.

This is not an attempt to draft a constitution for the government of industry—for all forms of government are secondary, the all important things are attitude and spirit and the application of right principles which always effect right relations—nor is it a detailed plan of organization for workers' representation in the management of industry; it is simply an attempt to point out the benefits that accrue from the extension of the principles of democracy to industry.

EFFECT OF COÖPERATION

The effect of coöperation between capital and labor on increased quantity and quality of service to society cannot be overestimated, nor can its power to remove the evils which promote strife and consequent waste in our industrial organization be ignored. Coöperation is the password which opens the door to unlimited, future economic and human development.

The ultimate measure placed on any shop organization is economical production. The effecting of full, intelligent coöperation by giving the worker a real interest in his work is brought about when he is a part of and partner in the undertaking.

When the workers are represented in management and function with the management on such matters as employment, promotion, demotion, discharge, finance, distribution, compilation of estimates and production methods in the shop, the workers will discover that there are hundreds of problems involved in manufacturing of which they were not aware and with which they are not equipped to deal. The realization of their lack of technical knowledge and special training will spur them to take up special lines of study on their own account. This genuine industrial education is one of the most valuable features, and, when combined with the economic incentive which a partnership involves, places the worker in a position where it is to his advantage to stop waste in material and energy, as well as releases latent resources of human energy and ingenuousness. The workers will have confidence in what is going on because they are in on the "know," they will commence to breath freely and act enthusiastically because of a clear understanding that their interests are the common interests.

Representation of the workers in management will eliminate unfair privilege or advantage and incompetent or selfish control by the employer, and

establish the principle of collective bargaining through representatives of their own choosing by employer and employee alike. No longer will the higher development of the worker be sacrificed for immediate gain to the employer or community, but the greater ultimate good to the nation as a whole will accrue by developing the individual to the highest possible standard.

Of what avail is freedom of thought or speech to a people unless they control the shaping of their own destiny?

Collective Bargaining and Its Effect on Production

By William M. Leiserson
Impartial Chairman, Rochester Clothing Market

As a general proposition, the desirability and need of securing increased production cannot be questioned. Even in normal times that may be accepted as a foremost aim of industry; for increased production means potentially, at least, a larger measure of well-being for all within the industry as well as for the community. Today, with all the wastage and losses of the war to be made good, the need is peculiarly urgent.

Worker's Attitude toward Greater Production

In the face of this undoubted need, what do we find to be the actual situation? The productivity of labor, generally, has fallen off; that a large measure of deliberate restriction of output is practiced by workers, non-union as well as union; that the wage earners frequently are not merely indifferent but are actually antagonistic to the introduction of machinery or methods aimed to increase production; and that production is being hampered and often completely interrupted by numerous strikes, and stoppages and by the constant shifting of workers which reflects itself in a large turnover of labor.

Moreover, we know with reasonable certainty that most wage earners are capable of greater productive effort without injury to themselves. We know, too, from the progress made in the past, that there are vast possibilities of increasing output through the introduction of improved machinery and methods. Our problem then lies in the discovery of means whereby this greater productive effort may be secured and the way may be made easier for the introduction of these improvements.

Is that means to be found in forcing him to work? Will talking to him, lecturing and exhortation get him to produce more? Hardly, when we now find textile mills and shoe factories shutting down because people would not buy at the prevailing high prices. Here the wage earner has had the fact hammered into his ears for two years that prices cannot come down until he produces more goods, and just as soon as prices do begin to go down, manufacturers who have been clamoring for production shut down their plants so as not to "over produce" as they call it. Are the manufacturers to be blamed now as the workers were before and shall we, by injunction, compel them to keep their factories open?

Perhaps, however, the forces that make for increased or lowered production are more deep-seated than the mere will of men, be they wage earners or employers. Herbert Hoover, upon his return from Europe, did not place the blame upon the workers in discussing the lack of production in Russia. He charged it to the system of management that the Soviets had provided for Russian industry. In the same way, may we not find that our lowered production is due to the kind of management we provide for our industries and to the lack of proper incentives to increased effort?

Why should the wage earner respond to the plea for more production? He is told by the people who presume to teach him what they call "sound eco-

nomics" that he should do so because the world needs more goods, and because prices can be reduced only by increasing the supply of goods. But does the investor furnish more capital simply because more production is needed and so that prices may be reduced? Does he invest in railroads because we need more and better transportation, and does he lend money to home-builders so that rents may come down? On the contrary, the railroads today cannot get the money they need for new equipment and extensions. Building is almost at a standstill because capital can secure a better return in the automobile business or in the manufacture of perfumes and other luxuries. Will the manufacturers of shoes, clothing and other necessaries continue to produce these articles in slack seasons and in periods of falling prices? On the contrary, it is not considered good business to invest in unprofitable enterprises and to continue keeping factories running full time when buying is slack and prices are falling. Why, then, should we expect the wage earner to respond to an appeal for more production based on social need, when manufacturers and investors cannot be appealed to in that way? May it not be that the workers too have had experiences which taught them that producing more under certain conditions was unprofitable and not good business?

The workers in many a seasonal industry have learned from bitter experience that to increase their efforts during busy seasons was merely to be laid off a few weeks earlier than usual and to lengthen the period of their unemployment. Those who work piece work have often had the experience that when they turned out more pieces and their earnings were increased, the employer assumed that the rate of pay was too high and cut the piece rate, or so changed the operation as to get the same result. Then, too, people in the so-called "sweated trades" have found that when production was increased it meant that more "cheap" labor was brought into the industry, the market was undercut and prices were reduced to a point where living wages could not be paid to the regular workers. Wage earners also remember that even the patriotic stimulus of the war was not sufficient to induce the farmers to grow more wheat or manufacturers to produce more supplies. The farmer had to be guaranteed a higher price than usual, the manufacturer had to be assured bigger profits. It cannot be expected, therefore, that the wage earner will increase his efforts simply because more production is needed and he is told to produce more. Very naturally he says: "I want to be sure that it is profitable for me to produce more." And when he assumes that attitude he is merely following the example that business men have set him. He is refusing to invest his labor in unprofitable work.

PARTICIPATION IN MANAGEMENT ESSENTIAL TO PRODUCTION

In the past it was possible for the employer to exact additional output, to speed up his workers, under threats of dismissal. However, the shortage of labor, the lack of immigration and the growing independence of wage earners makes this impossible. The employer now finds that his authority to get production is breaking down. Industry has today reached the point where the employer finds himself incapable of getting work done by means of a mere mandate. He is in a situation much the same that the King of England faced one hundred and fifty years ago when the American colonists refused to pay taxes unless they were represented in the making of the tax

laws. With the coming of political liberty and of free popular education, the workers now are no longer content that all the power over the terms and conditions of their employment should be in the hands of the employer. They look upon him as an industrial monarch, and as soon as the opportunity comes that shortage of labor and strong union organization gives, they say to the employer, "Unless we have a voice in determining the working conditions that control our industrial lives, we will refuse to obey the commands of industry."

While those who have hitherto controlled industry naturally do not want to give up their power, any more than the monarch wanted to yield his political power to the people, they confront the absolute necessity of sharing their control with the workers if production is to be maintained, not to say increased. Until such participation is granted by the employer, the workers may be expected to withhold production. With the employer's power to compel obedience to his orders fast going participation by the workers in the control of industry becomes a condition not only for increased production, but also for maintaining the production of the past.

That the wage earner's demand for a voice in the control of production is a fact and not a theory is proved by the zeal with which employers in every line of industry are establishing shop committees, work councils, and so-called "industrial democracy" plans. No employer who is frank with himself will deny that in inaugurating such a scheme he is hoping to head off the necessity of having to deal with a trade union. But with all the publicity that the so-called "industrial democracy" plans have received and with all the progress that the shop committee movement has made, it must be remembered that by far the more common form of participation of wage earners in control of working conditions is that provided by organized labor in collective bargaining with employers. The number of plants having works committees is insignificant compared with the number of shops that deal with regular trade unions. During the last four years, when the shop committee movement has made such great headway, very many more wage earners have joined the regular labor unions than are included in all the company plans put together. Even if all of these plans gave a real and effective voice to wage earners in the control of industry, and most of them do not, they would still be far from meeting the demand of the workers for participation in industrial government, because organized labor is growing very much faster in numbers, in prestige and in power, than is the competing movement launched by employers.

IS COLLECTIVE BARGAINING AN INCENTIVE TO PRODUCTION?

Modern industry, therefore, if it is to get production, is face to face with the problem of adjusting its management methods to provide for collective bargaining. Collective bargaining implies a questioning of the absolute authority of the management in governing the productive efforts of the employees. It says there must be no rules or orders affecting the interests and welfare of the wage earners without the consent of those who must obey them. It is further based on the principle that an individual employee cannot effectively question the authority of the management; therefore, the aim is to join all the employees in a union which together with representatives of the employer will form a legislative body for the purpose of giving to those

who have to obey the laws of industry a voice in determining those laws.

No matter how insistent the demand of wage earners for a voice in industry may be, and no matter how powerful labor unions may become, they cannot establish collective bargaining as a permanent method of industrial control unless such democratic control of industrial processes is more efficient, economical and productive than individual bargaining with an employer having absolute authority over his business. Trade unions, with their method of collective bargaining, cannot survive if this method does not bring greater production and greater economic welfare.

Recalling now that it is lack of profit from their labor and lack of incentive, not mere laziness, that causes workmen, like farmers and business men, to slow down production, the question arises as to whether collective bargaining and democratic control of industry offer to wage earners greater incentives to labor than individual bargaining, and will it make greater effort and increased production more profitable to the wage earners?

While there are many incentives to industry, all human experience has shown that there is no incentive quite so powerful for the great masses of men as private ownership of the results of one's labor. Private property in industry finds its justification primarily in the universal experience that men have more interest in working for themselves than in working for society in general, and that by letting each work for himself better results are secured for all. But what of the laborer in the steel industry, packing houses or on the railroads where individual ownership of the business by the worker is out of the question? Working, as he does, for a wage that is fixed not by what he produces but by the competition of other laborers who want his job, what sense of ownership can he have in the results of his labor? He sees the results of his efforts distributed by a few directors in the form of dividend payments or stock dividends, surpluses of various kinds laid aside or reinvested in the business to which he has no title of any kind. What incentive can there be for such a wage earner in the large modern industrial establishment to "take an interest in the business?" Certainly there is little of the incentive of private ownership for him.

This has been recognized by many employers, and some of them have tried to supply this incentive by establishing profit sharing plans in their plants. Others have sold stock to their employees on easy payments, built homes for them, provided pensions and insurance, and many have resorted to various other forms of "welfare work." Their experiences have shown, however, that while these measures may sometimes serve a valuable purpose to meet particular needs, they do not provide the wage earner with a sufficiently direct incentive to take an interest in his work, stick to his job and give increased production.

Many have thought that where it was impossible for the great masses to enjoy individual ownership this sense of ownership might be supplied through public ownership by the municipality, state or nation. But, obviously, there is no more direct sense of ownership in being a citizen than in being a wage earner or even a holder of a share or two of stock in a $100,000,000 corporation. Moreover, the experience of the past few years has shown that the public, as an employer, takes no more interest in its employees than does the capitalist. Even in publicly-owned industries, therefore, some more direct sense of ownership is needed if the

workers are to feel a sufficiently direct incentive to increased production.

Wherever collective bargaining is established, however, the wage earners have an equal vote with the employers in the fixing of wages, which is, in effect, deciding on the division of the wealth produced by the industry. Without depriving the owners or directors of the legal title to the business, collective bargaining limits their absolute property rights. When an organization of the workers has a 50 per cent "say," the owners must consult with labor before dividing the product. In substance, this "say" of labor becomes the same sort of right that the owner possesses. In addition, collective bargaining involves the surrender by the employer of his absolute right to discharge without proper cause. To some people this may appear dangerous, as if the workers were taking over the industry in bolshevik fashion. But these features of collective bargaining combine to give the worker a sense of ownership in the industry closely akin to the feeling of the man who works his own farm or conducts his own business. And if what the world needs is the powerful incentive to industry that comes only from a sense of ownership in the industry, then why should we not have collective bargaining when nothing else seems to provide that needed incentive? To employers who have to share their power over industry with those who formerly had to obey orders without question, collective bargaining may indeed appear dangerous. But if the public finds that this method of dealing with labor organizations does promote peace and production in industry without suddenly over-turning all our social arrangements, it may be expected to support this movement for the democratization of industry.

But is it true that collective bargaining in practice results in increased interest and increased production? The objection will immediately be raised that to give a share of control to the unions is to give power over industry to those who traditionally oppose greater production. But is it true that unionism stands in opposition to higher productive efficiency? The fact that curtailment of production exists today in every industry in the country belies that charge, for the vast majority of working people are unorganized. Thus, in the textile industries where unionization has met defeat after defeat, production is conspicuously low. The tendency of the union to restrict production is simply the articulation by organization of the individual workman's attitude. Moreover, the individual workman withholds production because he has no guarantee that increased production will be profitable to himself. On the other hand, given the assurance of a strong union that will protect him in the fruits of his additional effort, the worker gradually gets away from that tendency to restrict output which he develops as the only method of protecting himself against the arbitrary fixing of his income by the employer under individual bargaining.

This was amply proved by the increased production secured during the war, where government agencies dealt with organized labor or required employers engaged in war work to do so. It is further illustrated by a case involving a group of pressers in the Rochester Clothing Industry. These pressers wanted to earn more money. They were getting $29.00 a week then and wanted $35.00. All the other workers were getting a $3.00 raise at that time. The employers told these pressers that they could not give them more than the others were getting, but that if they would undertake to in-

crease their production 10 per cent they would be given an additional 10 per cent increase in salary. The pressers accepted the proposal and increased their production accordingly. There were some individuals who wished to withhold production after the raise in wages was granted; but the union saw to it that they lived up to their obligation on penalty of having their wages reduced. The union was able to do this by insisting that every individual must live up to the rule of the majority. Moreover, employers in Chicago and Rochester, who have within the last year or two entered into collective bargaining arrangements with the union of clothing workers, have stated that the production per man an hour in their shops has actually increased under this arrangement, although this was a time when most other industries have been suffering from curtailment of production.

Under such an arrangement the workers can no longer preach the idea that anything they can get from the employer is justifiable, for they now have as much to say as the employer in determining the division of the product of the industry. The union, as an organization, can no longer defend restrictive practices, for it has assumed a responsibility for the maintenance of output. The union, in fact, must exercise a discipline upon its own members in the interest of keeping up production. It is a common occurrence in industries where collective bargaining prevails for a union representative to convince a workman or group of workmen that they must maintain production. In a Cleveland plant which recently entered into a collective bargaining agreement with an international union of the American Federation of Labor, the superintendent found at first that the union shop committee in the plant was continually bringing complaints against the management in behalf of individual employees. The superintendent thereupon took advantage of the agreement with the union to file complaints with the committee against employees whose efficiency or whose production was not properly maintained. He then found that the committee was as quick to discipline its own people when the case was clear as it was to take up complaints for them. And where the discipline was democratically imposed by fellow employees, it was much more effective in getting results than orders of the employer.

RESULTS OF COLLECTIVE BARGAINING IN INDUSTRY

Production Methods

Collective bargaining has brought about a similar change in the attitude of the workers toward the introduction of machinery and improved methods of production. Here, again, the individual workman's feeling acquired under individual bargaining is falsely ascribed to organized labor, for the man who joins a union cannot rid himself, in a day, of the feelings acquired through years of experience. A certain degree of antagonism to improvements must always be expected, for it is the instinctive opposition of all human beings to changes in their habits or methods—common to employers as well as to workers. The introduction of pressing machines has been quite a problem in the clothing industry, but the unions have taken a stand with the employers in approving the use of these machines, and with the aid of the unions the introduction of the pressing machines has been made much more easy, even though some men have to operate two or three machines. Recently in Boston, however, one factory wanted to return to the use of hand irons. The workmen

objected most strenuously to this, showing conclusively that it is not machinery, but change to which wage earners object. It was the representatives of the union who succeeded in getting the pressers to use hand irons; the employer could not do it.

Opposition to machinery and improved methods has been much accentuated by many years of bitter experience under individual bargaining when employers used these to the workers' detriment. It will be recalled, in this connection, that the destruction of textile machinery in England during the thirties was done not by organized labor, but by unorganized enraged workmen.

The reason for this is plain when we bear in mind the statement of such a careful historian as Professor E. P. Cheney, of the University of Pennsylvania, who, at a recent meeting of the American Academy of Political and Social Science in Philadelphia, stated that the immediate result of the Industrial Revolution in England that ushered in the factory system was to bring more misery and poverty to the great masses of working people than they had suffered before, although it also enriched a greater number than had previously enjoyed riches.

With the protection to the workers' interests afforded by collective bargaining, the fear of the loss of job or wages, resulting from improved machinery or methods, is gradually eliminated. What may be accomplished when such a guaranty is provided is illustrated by what happened at the time of the introduction of the linotype into the printing industry. Union labor withdrew its opposition and assisted in the introduction of these machines when it received assurances that the former typesetters would be employed as operators of the linotype machines.

It has already been intimated that a collective bargaining arrangement may actively assist the employer in introducing new methods and machines. Under an arrangement whereby the workers are guaranteed an equal "say" with the employers in distributing the product of the industry, the wage earners acquire an interest in anything that will add to the size of the amount to be distributed. In the introduction of scientific management in a shop, a union may be especially helpful. I know of a shop where scientific managers introduced practically a complete system without any serious objection, because the matter was previously taken up with officials who called meetings of the employees and explained fully the nature of the changes to be made and that the employer had a right to make such changes under the agreement with the union. On the other hand, the same employer a short time previously had a great deal of trouble in another shop when an order was issued, without previous consultation with the employees, requiring daily records of work to be kept which had never been done before.

It is, of course, a common occurrence for employees to become unreasonably aroused over some change proposed or instituted in the shop by the management. Any one familiar with collective agreements between unions and employers, however, can cite instances of such employees going to union officials for advice, and on receiving assurances from these that the change would not hurt them and their interests would be protected, returning to work under the new conditions.

Piece-Work

Collective bargaining also has an important bearing on the wage earner's attitude toward piece-work or other forms of payment for measured

production. Most workmen do not believe in equal pay for all. They, who do the same work, want to get the same pay, but they also insist that those who do more than others should be paid more. When workmen have opposed piece-work, generally, it has not been because they were opposed to it in principle, but rather because they were opposed to the practice of employers of regulating the piece-rate by what they consider the workman ought to earn. When, under collective bargaining, the workers feel sure of the strength of their organization to protect their earnings, they do not object to piece-work or other forms of measured production. In fact, when the workers have something to say about the distribution of the wage bill they begin to feel strongly that the distribution ought to be according to each worker's contribution. Thus, we find the tonnage basis and piece-work accepted without question as the method of wage payment under the agreements of the United Mine Workers of America and of the United Shoe Workers. Where unions are opposed to piece-work, it will usually be found either that they are not strong enough to contest the power of the employer, or else the quality of the product is an important factor in the industry and that quality is measured by an examiner's opinion rather than a mechanical test. In both the women's and the men's clothing industry, however, where such quality is most important, and the unions have insisted on week-work, they have also agreed that standards of production shall be established for every weekly scale of wages, which, if not exactly piece-work, is payment for measured production.

Industrial Interruptions

A highly important gain to production from collective bargaining, which is commonly overlooked, is the lessening of interruptions to industries caused by strikes, lockouts, stoppages and also by high rates of labor turnover. Trade union agreements with employers usually run for a year or other stated period and during these periods strikes, stoppages, or lockouts are prohibited and arbitration of disputes provided. Between these periods the general tendency is for strikes and lockouts to decrease as soon as collective bargaining relations have been established in an industry. In the matter of labor turnover, no data has been collected to enable us to compare accurately the percentages of labor turnover in plants dealing with unions and those which do not deal with unions. It is strikingly noticeable, however, that the high labor turnover, which has been a matter of great concern to industrial managers during the last few years, is most common in the so-called "open shop" industries, whereas the industries and occupations which are unionized have a comparatively low labor turnover.

There is a common superstitious belief that democracy is always less efficient than autocracy, and therefore industrial efficiency is bound to suffer to the extent that democracy is introduced into industry. To the boss, the foreman, the superintendent or the employer, whose word has been law to his employees, it may appear most absurdly inefficient that he should have to discuss his orders with his employees and consult them about his policies. But when we remember that it has been his rule that brought us opposition to machinery and improved methods from the workers, restriction of output, strikes and lockouts, labor turnover of 400 or 500 per cent and more and the great decrease in production that most industries now suffer, it must be quite

plain that there is nothing efficient about autocratic control of industry.

On the other hand, it is not sufficient merely to curb the employer's absolute power and establish the wage earner's rights in industry through collective bargaining. This is the negative democracy that confuses liberty with freedom from interference. To be efficient, democracy must be positive and constructive, and deliberately organized to do the things which autocracy has failed to accomplish. Collective bargaining and trade unionism in industry must have administrative agencies for seeing to it that the problems of labor management, such as increasing production, progressive improvement in methods and technique, wage-payment for service rendered and discipline of employees, are properly and efficiently handled.

COLLECTIVE BARGAINING AGREEMENTS

Have the collective bargaining agreements between employers and trade unions developed such administrative agencies? No one who has studied the history of trade agreements in the coal mining industry, stove-molding, printing trades, on the railroads and in the clothing and building trades, can have any doubt that such agencies are developed where the collective bargaining relations are maintained for a sufficient length of time to permit it. In the first place, the unions in their own local units, district councils, conventions and executive boards establish that control and discipline of individual members which is essential in industry, and which, because it is democratic, is more effective than the employer's efforts at control. Secondly, when the agreements are made there are always joint meetings of representatives of the employers and the workers who have a mutual veto on each other's acts and who together legislate for the industry. Thus, the point of view of both labor and capital are considered in all legislation and each gets a thorough understanding of the problems and purposes of the other.

Then, during the intermission between meetings, officials of the organizations of both parties and committees of both employers and employees are in constant contact for the purpose of adjusting disputes and settling complaints and grievances of both sides. Thus, there are trained in a school of experience expert labor administrators who are able to give to employers that technique and knowledge of handling human beings which has been conspicuously lacking in the management of industry. At the same time, it gives to the wage earners labor officials who are not only expert union organizers, but who understand also the problems of the management and the financial side of the industry.

Finally, practically all trade agreements between unions and employers contain arbitration clauses. This is the rudimentary form of the judicial function in the constitutional government of industry. It has been the weakest point in the collective bargaining machinery because both employers and wage earners were most interested in establishing and defining their rights. They rightfully objected to any outsider, coming in as an arbitrator, doing that for them. In recent years, however, it has become more and more plain that the agreements made and amended from time to time by representatives of the employers and the workers are the real constitutions and laws of the industries. Not an arbitrator, in the sense of umpire or referee, is needed, but a man or board that will be partly a court and partly an administrative agency to carry the laws into effect. The Workmen's Compensation Commissions offer a good

analogy. It was found that compensation laws do not work out unless there is good administrative machinery to make them work, and trial boards, without all the legalistic methods of the courts, to adjudicate disputes under the laws. In such a manner trade agreements entered into by collective bargaining do not work out satisfactorily of themselves. They need administration, interpretation and application to particular cases from day to day, and for this a labor adjustment board or industrial court of some kind is necessary.

With this developed, to complete the administrative machinery of collective bargaining, we have a complete system of constitutional government in industry, modeled on the basis of experience, and capable of handling efficiently and constructively all the problems of modern production. It is bound to grow and survive as the prevailing type of labor management, because industrial monarchy with its insistence on individual bargaining has already broken down in its inability to get production from the wage earners.

Labor and Science

By Edouard Herriot

Mayor of Lyons, Deputy for the Department of the Rhone

Translated from the French by Edward Eyre Hunt

MR. MORRIS LLEWELLYN COOKE, who has been asked by the American Academy of Political and Social Science to make up a volume on the organization of labor and production, has done me the honor to ask my collaboration. It is a very great pleasure for a French administrator, constantly trying to check up his *theory by his experience*, to give an opinion on the laws governing modern society, side by side with such men as Mr. Samuel Gompers and Mr. Fred J. Miller.

I have already set forth my ideas in a two-volume work published just after the war under the title *Créer*[1] (Create). But today it is so imperatively our duty to work to realize the union "between the scientists of industry and the representatives of organized workers" that I do not hesitate to defer to the wishes of my American friends.

We are participating in a vast transformation of the world. It is dominated by three essential laws:

1. The moral concepts of liberty and human rights which have served up to the present time as principles for the constitution of society, without losing any of their importance, are themselves dependent on economic facts.

2. The development of the régime of exportation and importation tends to create a world-wide economic solidarity, so that the nations constantly react one upon the other.

3. In consequence of these fundamental laws, the laws governing organization are the same in different states, conditioned only by those shades of difference which are due to the national character.

---

[1] "Edouard Herriot's *Créer* is an extraordinary effort to strike a trial balance of the total resources of France and her colonies—resources moral as well as physical. It advocates a total transformation of national policy through science. Its doctrine is "produce or perish." And in the light of a sweeping survey, item by item, point by point, it indicates what is to be the future of France. Chapter by chapter the facts are marshalled: her depopulation, her criminal neglect of the most elementary means to combat the declining birth rate, the rising death rate, tuberculosis and alcoholism; her great mineral resources, especially coal, aluminum, and fertilizer phosphates; her lack of iron ore; her immense and undeveloped water power; her undeveloped railways and waterways; her awful neglect of the means of transporting thought, so that she holds the lowest place among civilized nations in her use of the post, telegraph and telephone; her inadequate ports; her enormously hopeful agricultural prospects; her small merchant marine; her fisheries; her need of industrialization, and especially of scientific management; how she must build her commercial and financial organizations to meet future needs; the work of her liberal professions; political reform; the renaissance of art; and the creative rôle of France abroad. That such a book as this could have been written in France today is a sign of great promise: that a French statesman could have written it is a covenant with the future.

"Edouard Herriot is no newcomer in letters or politics. A recent work of his, *Agir*, is first in the series of which *Créer* is second and *Vouloir*—not yet written—is to be the third. As an author he is already distinguished; as an educator he is famous—he has been a professor at the University of Lyons—and as a political leader his success is evidenced by the fact that he is Mayor of Lyons and Deputy for the Department of the Rhone."—Edward Eyre Hunt in *The New Republic*, December 17, 1919.

It is, therefore, an international problem which the American Academy of Political and Social Science proposes to discuss. It is a problem of social progress, of wealth and of poverty; it is a problem which overwhelms mere moralists. *Liberty itself, henceforth, will have an economic foundation.* Intelligence can no longer improvise; it must observe facts for a long time before pronouncing a decision upon them. The humblest workman, like the wisest engineer, henceforth can only be useful to himself and to others if he is conscious of the relationship which binds his own effort to the new order which we are trying to bring about.

LABOR AND SCIENCE THE FOUNDATION OF SOCIETY

There is nothing dubious about the first axiom on which all research must be based. In every nation henceforth there is only one legitimate force—labor. Every modern nation must be so organized as to utilize to the maximum the work of its healthy inhabitants, a part of the product of this labor being reserved either for those who cannot labor as yet, or for those who can labor no longer: children, the sick and the aged. Money itself is only potential labor; it is legitimate only when it acts as a source of energy. The vast ensemble of operations, which make up the work of collective production, cannot be brought to success without a means of liaison, which is just what money is. But money is nothing but a symbol. The only wealth is labor which increases the sum total of goods and products.

The day when this simple but central idea is admitted, we will not say that all our social problems will be solved (that would be too much to hope), but a principle will have been established which will give to the new society the fulcrum which Archimides wanted. This theory condemns alike the conservative who claims the right to play with the labor of others by virtue of a privilege established by custom, and the revolutionary who brandishes words without having won the right to be called a man by having contributed to the common welfare. The old political concepts to which we have fallen heir and which, after having dominated ancient civilizations, are stretched to embrace our modern nations, postulate two great classes always armed against each other—the "haves" and the "have-nots." The worker and the employer, leaving the same shop, turn their backs on each other to take up again their class attitude and point of view. What an absurd notion! They belong in reality to the same class, to that new class which little by little must grow self-conscious and range itself under this banner: *the class of labor and production.*

All our efforts as workers, employers and statesmen must therefore emphasize the *profound solidarity of the world of labor.* In saying this I am in thorough agreement, in spite of all the things which separate me from him, with Dr. Karl Helfferich, one of whose first axioms in his *Soziale Kultur und Volkswohlfahrt* (Social Culture and Commonwealth) is exactly like my own.

Pushing the analysis further, labor is divided into two kinds— *intellectual and manual.* Let us never permit them to be separated. They are brothers born of the same father. The engineer will not be worthy of his name until he knows down to the smallest details the technique by which he can prove his laws. The workman must know how to raise himself from the empirical practice of his art to the height of the science from which it is derived.

And from this comes the profound

necessity for transforming our systems of instruction and education. In young societies, like America, the gulf between the manual worker and the intellectual worker is doubtless not so wide as it is on the older continent. We Frenchmen, for example, have created an educated middle-class and have left the manual laborer in comparative ignorance. Cultural education is still opposed to technical education, thus strengthening the old social divisions. *Just as there is only one kind of labor, so there is only one culture. A man is a gentleman who runs a machine well.* The world is not divided half and half into ideas on the one hand and facts on the other. *Idea and fact are in constant contact.* One comes from the other. Our duty is to reconcile them.

To put it more simply, there will be no equilibrium in modern society until the dyer finds before him the means to become a chemist, until the mechanic can become an engineer and until, from the other side, the managing director of a street-car company can manipulate the motorman's control-handle, and the general manager of a gas company can himself fill the reservoirs. *Between workman and employer science comes in as a permanent agent of conciliation.*

There has been heretofore no check on the mystical theories which have agitated men. For most human beings politics is a religion. The quarrels between socialists and liberals are just like the old conflicts between Lutherans and Papists. I believe in only one agency of equality: *science*, always in a state of flux. Without science everything is time lost.

True democracy, whether it is French or Italian, English or American, exists only where the man who works can raise himself without hindrance to the loftiest heights of human effort, while the man who deliberately shirks is condemned to lose his place.

Labor and science are the foundations of the present and future society. To bring the world to this belief is to replace it on its base. From one end of the universe to the other this truth is self-evident. One of those who have stated it most forcefully is Marquis Okuma of Japan.

To sum up, by this *philosophy of labor and science* we return to the principles of Adam Smith in his admirable work *An Inquiry into the Nature and Causes of the Wealth of Nations.* On the eve of the French Revolution, when the modest Scotch professor, one of the most vigorous thinkers which the human spirit boasts, wrote his great book, he placed first and foremost this invariable rule: "The annual labor of every nation is the fund which originally supplies it with all the necessaries and conveniences of life which it annually consumes, and which consist always either in the immediate produce of that labor or in what is purchased with that produce from other nations. According, therefore, as this produce, or what is purchased with it, bears a greater or smaller proportion to the number of those who are to consume it, the nation will be better or worse supplied with all the necessaries and conveniences for which it has occasion." It cannot be better said. In other words, *the welfare of a nation is the quotient of the division of the amount of its products or of its media of exchange by the number of its consumers.* Thus welfare disappears as a political concept and reappears as an economic concept.

Moreover, let us note this fact: Who is most interested in increasing production—the source of welfare? It is not the rich whose savings can play the rôle of a reserve stock. It is not the farmer who can feed himself from

his own land. It is above all the laborer, the ultimate consumer of manufactured articles. Anyone who analyzes in detail the budget of a workingman can show him in each of his expenditures the reaction of world production. The price of a pound of sugar is a world fact in the sense that it ties in with a whole series of operations in production, transportation and exchange. It is the same for the price of a pair of shoes. I suggest this to Mr. Morris Llewellyn Cooke as a subject for study: *The most modest budget is a microcosm.*

The American Federation of Labor has seen this with a clarity for which it is to be congratulated. It is this fact which the American Academy of Political and Social Science proclaims in its turn. But, though it is true at all times, this theory of the relation between the total mass production and the welfare of the individual grows more striking in a world crisis wherein these two great facts are at work:

1. Decrease in production.
2. Increase in consumption.

During several years of convulsion the world, considered as an economic unit, has been wasting its reserves; it will take years to reëstablish them. This is what Mr. Herbert C. Hoover forcefully stated in a speech made on February 17, 1920, before the American Institute of Mining and Metallurgical Engineers; this is what we French people see better perhaps in a country whose forests have been partly chopped down in the national defence, whose mines have been destroyed in considerable number by the enemy, whose shipping in large part has been sunk, whose farm land has suffered and has been impoverished by lack of attention and whose consumption, moreover, has constantly increased. At the present time our herds have been brought up to the same figure as before the war, but this is no longer sufficient, for the demand for meat has trebled.

I believe, then, with Mr. Hoover, that the future belongs to the nations which organize to increase production by the cordial collaboration of *the workingman who may become an employer* and of *the employer who must also in his fashion be a workingman.* "The new relation," he says, "between the employer and the employee can only be brought about by organization in the heart of industry itself." For my part, I do not think it is enough to content ourselves with *instructing* the workman. I think we must make him *a business associate.* To be absolutely sure of a man his interest must be made to coincide with his duty. Up to the present time a productive enterprise has rested on two elements—brains and capital. These two elements have taken labor into their service for hire. I believe now that the moment has come to make labor an associate. I do not believe a business enterprise can be stabilized except where the science which directs it, the money which sustains it and the labor which produces it unite in the division of the profits and in a share of the losses. The scheme of coöperative production, such as we find in certain places in France, involves only two elements—labor and science. It lacks credit. For my part, I demand the fusion into one system of *the economic trinity.* Perhaps it will be brought about quite simply through an extension by vote of the by-laws of corporations. I believe such a method is the best way to organize the fight against the communist party which, in order to destroy capitalism, is willing to commit the anachronism of overturning the state and which harks back to a lot of worn-out political notions. If the "haves" would like to put an end to the class struggle, let them organize a

single class of producers in which all the elements participate in the benefits of their work.

I have carefully read through the documents which wax enthusiastic over the doings of the Socialist Labor Party, the Socialist Party, the Communist Labor Party or the Communist Party. In my friendship for the United States I am pained to see even there the vogue of foreign ideas, such as those of Karl Marx, imported about 1850 by Wilhelm Weitling and Joseph Weydemeyer. It seems to me that it was the activity of German immigrants which contributed most to the formation, about 1875, of the International Workmen Party. Today I see the theories of Lenine and Trotzky insinuating themselves into America, and it seems to me the Communist Manifesto, published by the *World* on January 5, 1920, reproduces exactly the program of Moscow's Third Internationale. Although I do not want to indulge in polemics, I do want to say that these antiquated and mystical theories do not fit in any way into the plans which young and forward-looking America can work out, establishing them on the foundation of national virtues by the collaboration of labor, brains and money. *The trinity of concrete forces must vanquish the coalition and fanaticism of mere words.*

If this collaboration is made a fact, if America, individualistic as France, creates this *economic democracy* which is the daughter of *political democracy*, the problem of production or of increased production will be solved quickly enough. Having united labor, money and science, it will quickly direct its efforts to working out the relatively simple laws of modern production.

The first of these laws is that the production of a great country like the United States or France must be both agricultural and industrial. Agriculture is still set over against industry. Great Britain long ago devoted herself to the first of these, then she concentrated on the second, counting on her fleet to nourish it and on her coal to pay for it. To her the war has shown the unity of agricultural production and industrial production, and the necessity for pursuing them together. I have been impressed by the fact that the United States is taking note of this and, after having long practiced extensive cultivation, at last is organizing intensive culture by the careful selection of seeds, the judicious employment of fertilizers and the use of farm machinery. Agriculture must become a science; its crops are still far from being what they might be. Let us admit that Germany, in this particular, has shown us the way, if only by the judicious use of phosphates.

In other words, agriculture must hereafter be only a province of national industry, for the whole state must be industrialized. In each particular industry the means of action must be the same. They are those which I have described at length in my book *Créer*. Above all there must be total subordination of everything else to science. At the heart of it all must be the research laboratory which is the *watch-tower* of industry. The chemical industry of Germany—we can never sufficiently emphasize it—owed its immense success to the savants. A new chemical reaction might mean profits of hundreds of millions.

Therefore, to make headway against our enormous needs, we must concentrate production in great combinations. A country like the United States, which can follow the history of industry from its origins, must see that it is constantly growing greater and greater. The forms of industry must grow greater

yet. First there is the little industry, then the middle-sized industry, then the huge industry. Already we are looking forward to the era of *the hugest industry*. The future belongs to enormous business concentrations.

Must we say, then, that on these vast fields for operations the rôle of the workingman has to grow more and more ungrateful, more and more humiliating? Laborers have been told this, but it is an absurd statement. The progress of the human spirit has always been towards a greater development of the power of *analysis*, towards greater specialization of function. Adam Smith has already proved it, and the widely varied and numerous efforts of Taylor had no other aim than to apply to the labor of the workingman that rhythm which is the very law of human thought. Such a science as medicine has had to subdivide itself in order to progress. Today, there are children's specialists, women's specialists, chest specialists, nerve specialists, ear specialists and eye specialists. Each of these, to be of any use, is obliged to know the whole of the field in which he works, but he has more particularly studied one part of the human body; and all progress in medicine has come about through discerning this point. It will be the same in industry.

Workman, never fight against science! Science belongs to no class and to no country. Science has sustained you; science will free you. Science alone; none but she! Throw to the winds the theories which have been born in the heads of political metaphysicians. Never since the world began have we been able to find happiness through the wonder-work of magicians. There is only one kind of white magic—intelligent work. Its reign is here and now. From one end of the world to the other (this very volume is proof) men of good-will are trying to work out the orientation of the new world, of this world—so great and so petty, so varied and so straitly unified. Each of us, brain worker or hand worker, has the right to demand his part in the common task of production. Whoever denies this is in error; whoever refuses to surrender himself to this vital truth gives aid and comfort to social malefactors and fanatics.

In this exhausted world, where famine has again made its appearance, where disorder reigns once more, the dominant duty is to produce. It is both a duty and a joy. Demand not only your part of the profits but your part of the science! Society, fortunately, will never believe in the equality of the wise and the foolish. The farther we go (tell this to your children) the more intelligence will command. The time will surely come when man will be chiefly a master of machines. Little by little all the brute forces will bow down and serve the spirit of man. Beyond all the creeds which presume to lift the soul of man there is this which is stronger than them all; moreover, it is true.

It is the doctrine which, while affirming the economic solidarity of the whole world, proving that our individual happiness is linked up with the proper organization of the whole, wishing for a brotherly sharing of profits, groups together laborers of whatever origin, manual or intellectual, under the laws of science, for production.

To live means to create.

Will Greater Production Cure Social and Industrial Unrest?

By Hugh Frayne
General Organizer, American Federation of Labor

WHEN discussing the subject of production and its relation to the high cost of living and the generally unsettled condition of the country, practically every one who writes or speaks on the subject invariably places the blame upon labor. This is done in general terms as they do not attempt to explain why labor is responsible but all use the same convenient argument that labor is demanding too high a wage and producing less than it should. This charge has been made so often in glittering generalities that the public has come to accept it as a fact, thereby placing labor in the false position of being responsible for the chaotic condition in which the country is at the present time.

Is Decreased Production the Fault of Labor?

Is this true? I want to say most emphatically that it is not. I base my opinion upon facts not upon theory or because of a partisan desire to defend labor. Those who give the subject careful study will be able to determine for themselves that the abnormal conditions confronting us are not because labor has failed to give the maximum of production or because the wages it receives are too high or because, as erroneously stated, labor has deliberately curtailed production. This lamentable condition is due largely to the greed of the profiteer who is responsible for most of the unrest and discontent not only of the worker but of the nation as a whole.

That many great changes in industrial conditions have taken place from those which existed in pre-war times cannot be denied. In some industries where the piecework system was in vogue and where the workers were permitted and often compelled to work sixty or more hours per week, there was quite naturally a very high production. Through the activities of the trade unions of these workers in many instances the piecework system has been abolished and supplanted by a week-work system on a forty-eight or forty-four hour basis. While it is reasonably true that the production on a sixty or more hours per week piecework basis was greater than the production on a forty-eight or forty-four week-work basis, there is a big question of doubt whether the production now under the shorter work week is a fair standard for the worker. Production under the longer piecework system was the opposite, taking into consideration the physical welfare of the worker which had always been unnoticed. In other words, production is not too low now but was often too high before, considering the human element and a decent living standard as a basis of measurement first, and dollars and profits afterwards.

Manufacturers and employers generally, who have had to conform to this change, complain bitterly that it has caused a dead financial loss to them. This is not true. The difference of sixteen hours taken from the working time of the piece worker on the sixty

hour basis would only mean a slight reduction in the abnormal production of the commodity as there would be no material used, no wages to be paid or general overhead expense incurred, therefore the sixteen hours' time could not, as stated by manufacturers, be a total financial loss. In seasonal industries, especially, the working time can always be extended to meet all necessary production demands.

A further argument is advanced by manufacturers and others that with the shorter work day has come the higher wages to the workers, thus placing an additional burden upon them. In answer to this, I point to the fact that never in the history of America have profits to the manufacturers and those having commodities to sell been as great as they have been since the signing of the armistice up to the present time. Therefore, whatever concessions have been made to the workers in granting the shorter work day or higher wages are more than overbalanced by the excessive profits which they are receiving, making due allowance for every overhead charge in the operation of their plants, even to the extent of meeting the high cost of living affecting every phase of their business and social life.

It has been substantially proven to the satisfaction of the public generally and especially to the working people of the country, that the reason given for the high cost of living is not due to the lack of a maximum production by labor and that a higher production would bring a lower living cost to the public. It is well known to those who have studied the subject that many living commodities, for which a prohibitive price is asked from the consumer, are not scarce because of lack of production but that the warehouses of the country have been and are overstocked with these necessary articles and are being hoarded in storage, preventing their natural direct flow to the consumer who could be plentifully supplied at a reasonably low price, taking into consideration and making full allowance for every natural normal overhead charge of production created as a result of abnormal conditions caused by the war.

The American Federation of Labor is a firm believer and a staunch supporter of the principle that labor should at all times give full and unstinted service to the end that the highest maximum production in all lines be maintained, but labor insists that it shall have a say in making and setting that standard. When production is increased to the detriment of the worker, his physical health or general welfare, the lines must be sharply drawn.

LABOR'S IMPORTANCE IN NATIONAL STABILITY

By what plan or system can the country be brought back from a war to a peace basis without seriously affecting the whole social fabric? Are we to return to the old system of industrial war caused by the employers of the country continuing to deny labor the right to organize or that labor will not be permitted to have any say in the making of the conditions under which it will be employed? Is the standard of living of the American working man and his family to be placed at a point where he or they must deny themselves many of the common necessities in order to live at all? The old idea of a living will have to be revised so that every comfort of life, consistent with the station of the worker, shall be enjoyed by him and his dependents. Life's comforts must be graded upwards in future. Exploitation of all kinds must cease if we are to have a better

world and a better life. Labor believes that it is entitled to this as it did most to save the world for democracy.

The American working man, with few exceptions, has always shown his intense loyalty and devotion to this government and its institutions. If that were not true they would have long ago arisen in their might and driven out the profiteers and all those who are, in their mad desire for profits, surely destroying the economic and social life of the nation, making us a nation of discontented people when we should be the greatest, happiest and most contented nation in all the world.

The American worker realizes that he was the greatest factor in the world war and his eyes have been opened by this realization. Understanding that he was the greatest factor in the winning of the war which saved human liberty for the world, he feels it not unreasonable to demand his fair share of that liberty and considers that it includes a higher standard of living than in the old days was possible not only for himself but for his family. That does not mean revolution; it means evolution—evolution upward. Inevitably it means a better nation for each one of us. It may or may not mean fewer of the very rich; surely it means fewer of the very poor and this means a higher national average.

During the war the great power of labor and its importance in the affairs of the world was demonstrated as never before. It has been clearly shown that there is no phase of the industrial life of our country that labor, in some form or other, does not enter. With this fact before us, let us not make the serious mistake of trying to reconstruct a great nation upon a foundation from which plan the rights of labor have been overlooked and expect the structure to endure. The greatest asset of a nation is labor; it should be protected in its rights. High standards for labor bring a higher development and the future should not be measured by the standards of the past. Labor should be accorded full recognition and receive justice and equity in all its claims.

Wrong impressions as to labor's importance should be corrected for, unless the labor problem is considered as part of the whole subject of national stability, industrial wars will continue to go on in the future as they have in the past and will be more harmful to the country's welfare. Unless this is done a social unrest will be created which will have a more far-reaching effect upon the affairs of the country than even the war itself, because it would be more permanent. The workers have learned that they are the basic foundation upon which the success of the nation must depend and they feel that they are entitled to a larger share of the results of their labor than ever before. Social and economic justice must be given to them as a matter of right, not as a concession.

The world needs balancing because of the high tension under which we have lived during the war and up to the present time. America must furnish her share and perhaps the largest influence in that direction because it is absolutely necessary for the sake of all the peoples of the world that we should strive to overcome this condition. Financial interests and employers generally must be made to understand that their first duty and obligation is to protect the nation, and employers who believe that their responsibility ends with the employment of a worker must be brought to realize that beyond their financial

interests and simply giving the worker employment, they must concede every right that others have and which they claim for themselves. The right of workers to organize, to collective bargaining and the right to have a say in making the terms and conditions under which they shall work, through a representative of their own selection, must be conceded by the employers and should never be a matter of controversy. An employer's obligation does not end there as he should take a greater personal interest in seeing that the workers in his employ are properly treated, trained and fitted to perform the work to which they are assigned, so that by training and developing and the right of collective coöperation with their fellow workers, they will be able to give service of a high standard and receive in return due and full recognition for that service. The first essential of the successful operation of an industry is the proper recognition by the employer of the human and other rights of the employe. Such sympathetic coöperation will reflect itself in production and other advantageous ways to the general betterment of all.

HOW SHALL SOCIAL UNREST AMONG WORKERS BE PREVENTED

That there is a keen social unrest spreading among the workers throughout the country no one can deny and to treat it with passive indifference is a very serious mistake as that is not the remedy. To prevent this growing unrest that is leading many to the doctrines of bolshevism is the responsibility of every one of us who believes that sane methods rather than insane should be applied. Many methods have been suggested by those who are unfriendly and do not understand labor, some of which are most drastic. You cannot destroy bolshevism by putting it in jail, deporting it or even killing the individual as that would only aggravate and intensify the condition. Recognition of the human and other rights of the workers will do more to allay social and industrial unrest and have a greater harmonizing influence which would make for better coöperation, than any force or coercion that employers may use.

The creation of industrial courts, court injunctions, bonus and profit sharing schemes and the so-called industrial democracy shop idea, which are nothing more than old methods under new names, all of which have failed, will not be accepted by the worker because none of them solves his problems. He believes that his trade union has done more to establish industrial freedom for him than any other agency could. The right to work or not to work is an inalienable right which he is not going to surrender. Whether employers want to or not they must realize that the old pre-war conditions will not be acceptable again to labor, neither shall labor accept wage reductions for it contends that wages are not too high now but were too low before, and they are going to maintain the new and higher standards, come what will; but if the cost of living is reduced to the level where abnormal prices and profiteering are stopped, labor will then not have to make so many demands for wage increases to keep up a decent living standard after the cost of commodities are stabilized. If labor must continue to bear the burden of the high cost of living without the protection of those government agencies charged with that duty, it must in self-defense continue to demand more for its services in order to maintain the new and higher standards of living which it believes it deserves.

When we speak of social and indus-

trial unrest it is not enough that we simply mention one of the several fundamental units entering into the whole problem. It is not possible to cure a nation's economic and social ills unless we take into consideration all of the elements that enter into the question. Labor's rights are human rights and are prior to all others and if labor, through its service to society and by its industrial activities, succeeds in establishing a higher standard of life for itself, the natural sequence will be that the social life of not only the workers will be greatly developed and improved but the same will reflect itself throughout our whole national life as well. As time goes on the inevitable is bound to happen; the working people through the force of organized effort will have established a higher living standard socially and industrially. This is the natural law and trend of evolution which rules the destiny of all.

It is too much to expect that organized labor of America should assume all the responsibility of placing the country back to normal conditions. Labor now, as always, is willing to assume its full share and will make any sacrifice necessary to that end. However, it is not a group question; it is a national one and should be dealt with as such. If labor, as during the war, is expected to surrender the human ideals which it has struggled and suffered in the past to establish and which have done so much to bring a little happiness and comfort into the lives and homes of those who have had none before, what is expected of those who have taken advantage of a nation's helplessness while recovering from a great war? Are they to be permitted to break every law of decency and right, as well as the laws of the country and continue their exploitations, giving no consideration to the rights of the people or the country's welfare, paying no attention as to how much they are entitled to in the way of profits but acting on the principle of getting all they possibly can? The unsatisfied greed of the profiteering element is responsible for the dislocation of the whole social and industrial fabric which has prevented the reconstruction and the proper readjustment and stability of the nation.

In the United States the profiteer has made the lot of the majority of the population almost unbearable and it is reasonable to believe that pure Americanism, which glories in the fact that it had its origin in revolt against injustice, in due course will revolt against this most flagrant of all injustices if it is permitted to continue. There should be a law passed to punish those who are charged with this responsibility. Commodity values should at once be reduced; that would increase money values. For every 25 per cent that prices are reduced the value and purchasing power of money will be increased proportionately, thereby helping to stabilize and standardize conditions. Restore the American dollar to its standard value of one hundred cents, then every person in this country who has a dollar will be able to buy two dollars worth of present values.

Industrial problems cannot be solved by evading them or by attempting to substitute unsound theories or practices which up to the present time have failed as a remedy. This is a human problem and must be the basis upon which any plan for the reconstruction of economic justice to the workers should be founded. Unjust laws or unsound principles are not constructive nor do they tend to improve the condition or the welfare of the workers; instead of being helpful

they simply retard and destroy general development. This is a serious economic loss which cannot be prevented or replaced unless the full rights of the workers are guaranteed.

Much has been said about the great loss to the country through strikes and industrial disturbances which it is claimed have curtailed production to the extent that it was responsible to a degree for the living costs going so high. Industrial casualties in the United States every year equal this country's total loss of wounded and killed during the war. In the state of New York in the year 1918 there were two hundred and eighty thousand industrial accidents reported. The cost of compensation was fifteen million, five hundred thousand dollars. The total cost of accidents to industry was sixty million dollars. Many of these accidents were preventable. During all their fighting, the marines did not lose as many men killed, missing in action and dead from wounds as the industrial army of the state of Pennsylvania lost during the year 1918. If to the marines wounded in action there are added the number of men in the army branch of the service who were wounded in action, the total will fall below the number of wounds sustained by Pennsylvania's industrial army during the last twelve months. Strikes and industrial disturbances are only a temporary stoppage of production while industrial accidents, most of which are preventable, either permanently remove the workers from industry or maim them in such manner as seriously affects their efficiency, causing them great hardship because of economic reasons and affecting their productivity in industry which is more responsible for a curtailed production than strikes and labor controversies can possibly be.

SHALL LABOR BE RULED BY FORCE?

I am not in accord with those who declare that the only method of dealing with labor is by a policy of force and who expect through this method to have labor subscribe to their doctrine as a means of establishing industrial peace. Their contention for the establishment of the so-called open shop and secret methods of discrimination and black-listing of workers does not lead toward the harmony and coöperation that should always exist between employer and employe. To expect that any group of workers can give the best that is in them, even though they may honestly strive to do so under such circumstances, is expecting that which is impossible. To rule labor by force on the one hand and a submission by labor through fear on the other create two conflicting and opposing forces which cannot be reconciled and when those who use such methods in dealing with the labor problem change to the modern idea and recognize the fact that there can be no peace or harmony under such conditions, then will we have reached the stage when the human method of dealing with labor shall replace that of the brutalizing and coercive one.

THE PRICE OF EXTRAVAGANCE

At this time when the question of the high cost of living and the profiteer is in the minds of every one—labor more than any one else—the argument has been brought forward by many that the workers, especially, have become extravagant in their living and if they would produce more and consume less this change would go far toward relieving the situation. We have, it is true, the problem of the high cost of living and there is also the cost of high living which is a right of

the wage earner to have more and better things on which to live. In pre-war times many families were forced to get along without many of the commonest necessities which affected them physically and otherwise, and reflected itself in their inability to work and produce the maximum required because of a reduced vitality. Reports from the New York Board of Health and the Board of Education show that with all of the boasted extravagance and high living of the workers, thousands of school children are suffering from malnutrition because the parents do not obtain a sufficient wage to provide nourishing food for them. This is a most serious indictment against the industrial conditions of our country and refutes the statements of those who speak without knowledge of facts, as the future men and women of industry and other walks of life must be drawn largely from these underfed and undernourished children of the overworked and underpaid men and women who do not receive for their services a sufficient amount to maintain themselves and families at a standard anything near that which the American working man and his family should enjoy. If there is going to be a physically and mentally strong and healthy generation to follow, that hope lies in the safeguarding of the children of the present who will be the men and women of the future, upon whom America will have to depend for its national life.

Anyone who will give thought and study to the question of the cost of high living and will approach the subject with a view of obtaining truthful information, will have no trouble in determining that what was a few years ago a luxury is now a common necessity. The young man or woman in industry, having secured a position where they are decently paid for the services they render, are now for the first time privileged to buy better clothing and sometimes jewelry and other adornments, more clean and wholesome food and enjoy many social comforts in the form of amusements of various kinds, all of which had been denied them in pre-war times because of economic conditions. Shall we say that they are not entitled to these things, they who work, produce and give service for the compensation they receive, high though it may seem to some? If they are forced to pay exorbitant prices for these comforts that is not their fault, it is the fault of the profiteer who charged them far more than the commodity was worth. To stop buying, which would mean to stop consuming, as suggested, and deprive them of these comforts, would also stop the wheels of industry, throwing many thousands of men and women out of employment; so instead of being a remedy to help solve the high cost of living by curtailing the consumption of commodities, it would intensify and aggravate the situation and make conditions even worse than they are at the present time.

I admit that there is a new high standard of living created by working people which has been criticized as the cost of too high living but when that high living cost, made high not by the workers but by those over whom they have no control, is carefully surveyed we find in homes where formerly there were no comforts in the way of furnishings, decent living surroundings or the opportunity for educating the children, that there are now many of these comforts and privileges not previously enjoyed. Shall we say that this natural, normal and evolutionary development to a better standard of life is to be held

responsible for the chaotic condition from which we have been struggling to free ourselves during the past few years, or shall we place the blame where it rightfully belongs, upon those who, under the guise of patriotism and boasted Americanism and in their mad desire to obtain wealth and power, would sacrifice every ideal and tradition of the nation and all that a people could give to make it great, without any consideration except one of selfishness and personal interests?

America's problems are unlike those of any other country because of the cosmopolitan make-up of its population. Its citizenship largely depends upon the foreign races of other countries who come here bringing with them all of their racial traditions and characteristics. They come to us expecting to find and enjoy that great liberty which their own countries have denied them. This foreign mass must be made into real American citizens, which is a very slow process, made more so because they do not understand our language and customs. Education and opportunity, with humane treatment, are the most helpful agencies to accomplish this purpose.

There is one feature of this whole problem that should stand out more prominently than any other and that is recognition by all of us of the human elements that are so necessary in life. It has taken a great world war to make us fully understand that human life is the most precious thing and must be regarded as such. If we ever hope to occupy the position before the world that the United States must take, we must lead the rest of the world in all things, the greatest of which is the recognition and safeguarding of human rights in its truest sense. The humanizing influence of a great nation such as ours must adopt these basic fundamentals and lead the way for the rest of the world to follow, by stabilization under governmental protection and regulation, so that there shall be less danger of future industrial upheavals. If these fundamentals are recognized by employers as a right of the workers, it will go a long way toward creating a greater production and curing social and industrial unrest.

We saved the world for democracy, now let us save democracy for the world.

What Is Production?

By Thomas Warner Mitchell, Ph.D.
Consulting Production Engineer, B. Kuppenheimer & Co., Clothing Manufacturers, Chicago, Ill.

Introductory

EARLY in the following pages we shall answer the above question by saying that production consists essentially of so changing matter in composition, in form and size, in place, in time and in possession as to render it capable of satisfying the wants of the persons who eventually use it; or, as the economist would put it, production consists in the creation of utility—of form, place, time and possession utilities. Were we to stop there, however, we should say little that is of value. Therefore, we have conducted the analysis and discussion that lead up to this first conclusion in such manner as to lay the foundation of and lead on to a more important result, namely, a statement of what is society's production problem—the economic problem. From the brief discussion of the characteristics of our wants, on the one hand, particularly the fact that practically they are capable of unlimited expansion in variety and extent, and, on the other hand, of the quite limited extent of our available resources in space, time, materials, equipment and energy, we see that society's production problem is to put such space, time, materials, equipment and energy as are available to the most important uses and to the most effective use.

The purpose of all production is to furnish goods with which to satisfy our wants. Except for the fact that we all have wants, and many of them, which can be satisfied only by applying certain concrete material articles, there would be no necessity, no motive for producing these articles, and no industrial activity. To understand what production is, therefore, we must start with a brief consideration of our wants.

Wants—the Cause of Production

Many wants have their origin in needs. In our bodily activity we burn fuel in the muscles, and break down tissues. If our bodily activity is to continue for long, these tissues must be rebuilt, this fuel replenished, energy must be restored in our muscles. There is need for replenishing material. Corresponding to this is the sensation of hunger and the want for foods containing certain organic compounds. Without protection, our body temperature would be too much lowered, our bodies would be subjected to many injuries. There is need for bodily protection; corresponding to this is a want for clothes, shoes, etc. Whether all wants originate in needs will be left to the psychological economist.

Each specific want is capable of complete satisfaction during any given short period. We become hungry; we are fed; and the want for food is entirely removed for the time being. It is so with any other specific want that we feel at any particular moment.

But most wants reappear at more or less periodic intervals. We satisfy our hunger in the morning, only to have the job to do over again at noon, and again in the evening, day after day. We hear enough of a certain song or other musical selection on one day only to be delighted with it on a later occasion. The recurrence of wants at more or less regular intervals is a familiar and important feature of them.

While any given want is capable of complete satisfaction during any given period of time, and is therefore limited in extent, the number and variety in the kind of wants we are capable of feeling seems capable of indefinite expansion—unlimited. We have all had the experience of wanting some one thing—a pair of skates, a bicycle, a piano, an automobile—so much that we were not aware that there was anything else in the world worth while. If we could only obtain that one thing we should be supremely happy and content. However, soon after getting it—after the novelty had worn off—we discovered that there were other things we wanted. Less important wants make themselves felt as soon as the more urgent wants are provided for. We are never satisfied, no matter how much we have.

If the process of satisfying a want did not take time, therefore, our ability to consume goods would be indefinitely great. There would be no limit to it. With most wants, however, the process of satisfying them does take time. Eating takes time. We can wear only one pair of shoes, one set of clothing at a time. For this reason the number of wants we can satisfy during any given period of time, even though we have ample means, is limited.

It is true that we can eat food and wear shoes and clothes, enjoy beautiful flowers, elegant furniture and a conversation or an orchestra selection at the same time. It is true that we can furnish our bodies with the kind of material needed, appeal to the gustatory sense and to the aesthetic sense—in tasty serving—all in the one article. The same article may be both a musical instrument and an elegant piece of furniture. And the tendency in all production is so to prepare each article that it will minister to the satisfaction of more than one kind of want. Nevertheless, our ability to do this is limited, and the number and variety of wants we can simultaneously attend to and satisfy is probably limited. But the limit is an elastic one. And few of us have ever attained it or had the means of attaining it.

Most wants can be satisfied only by applying certain concrete material things. Our hunger can be satisfied only by our consuming certain specific foods. Protection against the elements is afforded only by our wearing shoes and various articles of clothing, living in houses, etc. There are certain apparent exceptions; for example, our desire to hear Caruso and a supporting troup sing Pagliacci; but to gratify this we must provide the hall, the orchestra instruments, yes—and even Caruso and his troup.

These concrete material things—called "commodities," articles of "wealth," "economic goods" or simply "goods"—do not exist or come into existence spontaneously as needed or desired. They do not spring into existence automatically in response to the want. They must be "produced."

Production Utilities

The materials exist somewhere, but in disassembled form. They must be assembled into the combinations that are capable of satisfying these wants. In agriculture, horticulture and other extractive industries certain plants, animals, etc., are grown to build up the needed organic compounds. Even certain chemical manufacturing industries do the same thing; synthetic dyes are made; the druggist compounds various drugs in certain proportions in filling a prescription. The materials must also be put into the right size and shape for satisfying wants. The wood must be converted into a chair, table, flagpole; the steel and bone into a penknife; the wool into suits of clothes;

the kernel of the palm nut into buttons and so on. This work is said to create *form utility.*

Oranges in California, collars in Troy, N. Y., pen-knives in Sheffield, England, cameras in Rochester, N. Y., are of no use to me in Chicago. They must be transported to the places occupied by the persons who want them. Transportation whether long or short, is said to create *place utility.*

Potatoes harvested in September and October will be of no use for satisfying hunger in January or May, cotton gathered in December will be of no avail for making clothing in March or June, unless preserved in the meantime.

They must be stored until the time at which they are wanted. Storage is said to create *time utility.*

Finally, in order that the orange, the pair of shoes, the house, the motor boat may satisfy my wants, I must have possession of them so that I can apply them; I can eat the first, put on the second, get into the third or fourth. Giving me this possession by sale, lease or otherwise is said to create *possession utility.*

Form utility, place utility, time utility, possession utility are not really different utilities. They are merely successive phases of the whole process of providing me with an article that is capable of satisfying one of my wants.

In its broader sense, production consists of all those activities the purpose of which is to combine the chemical elements into the right combinations or substances; to convert these into the right forms and sizes and put them into packages that preserve them and are convenient for handling; to transport these goods to the places where needed; to preserve them until the time of need; and to deliver them to the persons who want them. Production consists of all those activities that create *form utilities, place utilities, time utilities,* and *possession utilities.*

DIRECT AND INDIRECT PRODUCTION

In every day language, however, we probably confine the meaning of the term production largely to the first case. We ordinarily think of the farmers, the miners, the fishers, the manufacturers, as producing. We do not ordinarily think of the railroad, the warehouse and particularly the wholesaler and retailer as producing. Yet, since in our modern economic organization, each performs a necessary service—constitutes a necessary link in the process chain by which we are provided with want-satisfying goods—it is difficult to see where a logical distinction can be made.

In the production process energy is applied to materials. Animal or mechanical energy is applied in moving the plow through or the harrow over the ground, in moving the seed into the ground, in gathering the crop. Human, animal or mechanical energy is applied in the factory in removing the seed from the cotton, in spinning the cotton into yarn, weaving it into cloth or knitting it into garments; in feeding wheat through a mill and grinding it and separating it into flour, bran, middlings and shorts; in mixing flour and other materials, making them up into loaves, cakes, and so on and baking them; in transporting these things from place to place; in building the warehouses and other places in which materials are stored. All changes of form and place are accomplished only by applying energy to materials.

This energy may be that stored up in the muscles of human beings, in the muscles of animals. It may be applied through simple tools such as the axe, the hammer, the saw, the sled or wagon, or through more complicated transmitting mechanism—machines—such

as the treadmill, the sewing machine; or it may be the energy stored up in wood, peat, coal, petroleum, or the waterfall and applied through complicated machines. In olden days it was mostly animal and human energy. The progress of scientific discovery, invention and the industrial arts has more and more substituted mechanical for human and animal energy as the driving force in industry.

Nature is applying energy to materials in all her processes. Sunlight and heat are forms of energy that apply themselves to the elements of the soil and air and cause plant life to grow and store up energy. Sunheat falls upon the surface waters and stores up the energy in the clouds. This is released in the rain, which wears away the earth's surface, forms into streams and wears creases in the earth's surface, creates waterfalls, wears away the rock and carries away surface material and deposits it in new places, sometimes enriching the soil, as in the overflows of the Nile and the Mississippi, sometimes carrying the material out to sea. Water sinking into the earth's interior in obedience to gravity takes up heat energy from the interior, dissolves minerals along its course, and coming into fissures near the surface where the energy is released, deposits gold, iron, lead and so on.

But left to herself, little of nature's work would result in articles capable of satisfying men's wants. So far as our purposes are concerned, nature's combinations are haphazard. Production involves one other important element. This is intelligent planning and direction. The application of energy to materials must be planned and directed if want-satisfying goods are to be produced in any but meagre amounts. Intelligence must anticipate that certain wants will be felt during the next season, or year or decade or generation, must decide which ones to provide for and what proportions, must choose the materials, plan the processes—the application of energy,—indeed, in the performance of each process must plan the application of the energy and direct it.

This planning and direction, always an indispensable function in connection with each process, is coming more and more to be the main function of the human factor in industry, and the application of muscular energy in the processes is becoming more and more a mere incidental function, such as pushing and pulling levers, pushing buttons to start and stop machines, guiding materials, etc.

Production is carried on then by intelligently planned and directed application of energy to materials. But our productive capacity is limited. It is limited because our productive resources—our available materials, our available energy, our available directing intelligence—are limited.

There may be unlimited material in the universe. We, however, are on the surface of the earth. Our material is limited to the stock that we have already accumulated and to that which we have made accessible by bringing the earth's surface under cultivation, by opening up mineral resources, etc. As time passes we shall make more available by subduing more of the earth's surface, discovering and opening up more mineral deposits, but even the whole earthly supply is limited were it all available.

There may be unlimited energy in the universe. But only that which is available here on the earth's crust is of any use to us in production. And this, during any specific day, week, month, year, is a definitely limited quantity. It is limited to the solar heat and light that falls upon our agricultural areas, to the wind that strikes our sails and

windmills, to the water power that we have harnessed, to the wood, peat and coal that we have already delivered to our power plants or that we shall deliver in the ordinary course of events, to the natural gas passing through our pipes. It is further limited by the amount and kind of facilities that we have already accumulated—the power plants, the machines that we have already created and set up—for its application in productive work. As time goes on and we continue to apply a portion of this available energy and these available materials to the production of more of such machines, such power plants, to the harnessing of more waterpower, and so on—as society continues to save—we shall increase the amount of materials and energy available for future productive purposes. As scientific discovery and invention proceed we shall obtain command over more forms of energy and a greater fund (or flow) of it, and shall have more effective means of applying it. But even then we shall not have actual command of an unlimited supply of energy or materials. It will simply be a greater amount than is now at our command.

Here we encounter the economic dilemma. Our capacity to produce goods is limited. Our capacity to feel wants, our capacity to consume goods is very large—so large as to entirely outrun our capacity to provide for them—practically unlimited.

The economic consequences are very important and far reaching. We cannot have enough to satisfy all wants. No matter whether the products of industry are equally or unequally divided, no matter whether we have private competitive, private monopolistic or socialistic industry, we cannot produce enough to satisfy all the wants of all the people. Therefore we have two important problems:

The first problem is to so divide our available productive resources among the various lines of production as to provide for the various wants in proper proportion—so as not to provide for unimportant wants at the expense of more important ones; not to provide for any want, relatively important or unimportant, beyond the point at which it becomes less important than is some other want to the provision of which available resources could be diverted. Imagine a starving man spending his money on a theatrical performance instead of food. Picture the feelings of the tired, not-too-well nourished, clothed and housed pedestrian multitude when they see a pampered, beribboned poodle taking an airing in a passing Pierce-Arrow.

Any person's capacity for consuming any one specific kind of article is limited. My capacity for consuming potatoes is narrowly limited. The capacity of the whole population to consume the one specific kind of article is similarly limited. And, indeed, long before its limit is reached the question will arise whether something else is not more desirable. Consequently, it is possible to have over production of one kind of article, or of a few kinds. Over production really means that the proportions in which the various articles are produced are not the same as the proportions in which they are valued and demanded. Those produced in greater proportion to others than is demanded are over produced; the prices they can command do not make their production profitable. But at the same time other commodities, by virtue of that very fact, are "underproduced"; their prices make their production unusually profitable. While thus there can be (relative) over production in a few lines, there cannot be a general over production of all commodities. Consequently, if our pro-

ductive resources are properly apportioned among all lines of production there is demand for every resource, every ounce or hour of labor. It is not true, therefore, that there is only a limited amount of work to be done. There is practically no limit to the demand for labor. Idleness is merely a sign that our productive resources are not properly apportioned among the various industries.

The second problem is to use the materials and energy that are available in the most effective manner possible—so as to get the greatest possible amount of want-satisfying goods per day, per week, per month, per annum in their use. While, with the limited amount of materials and energy at our command we cannot fully provide for every want of every person, nevertheless, we can and do make a greater or smaller provision for them according as we use these resources more or less effectively. Materials can be used economically or wasted. Energy can be applied effectively or ineffectively—it can be expended in doing only work that contributes to that purpose; that which is done, whether useful or useless, can be done in such a manner as to consume the minimum amount of energy or in such manner as to waste precious energy. Recently, the writer found in a certain shop that three-fourths of the work being done in a certain operation did not contribute to the desired result, that it was wasted effort.

Most wants recur in time. All production consumes time. Therefore, time must also be economized, but time also can be used effectively or ineffectively according to how well productive activities are planned and controlled. All productive activities, all storage, occupy space. And the space at our command is also limited and must be economized. Space also can be effectively or ineffectively used according to how its use is planned and controlled. Organization, planning and control—the intelligence factor—are necessary for the effective use of available space, of available man and machine time as well as of available energy and materials.

Production managers are wont to speak of "productive" and "unproductive" labor. By "unproductive labor" they mean the sweepers, the instructors, the inspectors, the foremen, the clerks—workers whose work does not register itself directly in an advancement of the product toward its completion. But planning and directing and instructing and inspecting and sweeping are necessary to efficient production. Without them there would be less product or no product. To the extent that they are necessary they are just as productive as is the labor that "impinges directly on the product." Better terms, as was long ago pointed out by the accountants, are "direct" and "indirect" labor. The only "unproductive" labor is labor that is ill-spent, labor that is wasted.

The problem of production, then, is to so organize, plan and control the application of the limited available energy to the limited available material in the limited available space, at our disposal, so correlated in time with reference to the occurrence of our wants, as to make the greatest possible provision for the satisfaction of those wants. And this application of energy to material in space and time—these productive processes—assembles materials into the right combinations, puts them into the right forms and sizes, moves them to the right places and makes them available at the right time to satisfy these wants.

The Philosophy of the Restriction of Output

By Leon Ardzrooni
New School of Social Research, New York City

IN a recent market letter issued by a prominent business house the following statement occurs in connection with a survey of current economic conditions: "The most important of the favorable factors are the world shortage of goods, the present low prices of investment securities and the expenditure of the greatest wage fund ever received by a nation's workers." Another high authority on present-day business conditions remarks with significant nonchalance: "The war consumed more men, more food, more clothing and more raw and wrought material than all the wars since 1760, though it left the United States richer than ever before." To substantiate this opinion he adduces a statistical array of a few score thousand war millionaires and the present estimated per capita wealth of the United States.

The Object of Restricting Output

Under the régime of money and price economy such factors as "the world shortage of goods" or "the expenditure of the greatest wage fund" are familiar concepts as evidences of business prosperity and national welfare. The primary purpose in modern business and industrial activity is merchandising—buying and selling with a view to securing as wide a margin of net money returns above cost as possible. As a result it often happens that a superabundance of merchantable goods is inconsistent with business success which is invariably measured in terms of net price returns. Over-production is the nightmare of business and though the children of common folks may starve for want of a sufficient supply of milk, as a matter of sound business policy it is better not to have too much milk to sell than to have enough milk to drink.[1]

Restriction of output and limitation of supply of goods are normal and legitimate phenomena in business. In fact, the life of modern business enterprise depends on such performances. The established governments sanction these practices and the courts protect the practitioners. In its stricter and more technical application, however, "restriction of output" refers not to the business man's method of monopoly control with a view to profitable merchandising; it has reference rather to the trade union policy of interference with the processes and guidance of production with a view to standardizing the volume of employment and the rate of remuneration of the wage workers. Regarded

[1] According to the newspapers, the milk distributors in New York memorialized the milk producers last winter to the effect that the already scant supply of milk in New York was too abundant, and that in order to make profitable sales it would be necessary to reduce the supply of milk still further. There was too much milk to sell but not enough to drink. Perhaps a more typical illustration of the same point is the sharp protest and rebuke with which the Chicago meat packers assailed the Army and Navy departments which recently released vast stores of meats to relieve the acute shortage and to afford a brief respite from the high price of meat with the result that the Army and Navy supplies of meat were either withdrawn from the domestic market or bought by the protesting packers. Obviously, there was too much meat to sell but not enough to go around.

in this light, "restriction of output" is a phenomenon in the modern industrial system which presupposes a high degree of organization of material and mechanical equipment and an equally highly organized group of workers subject to collective discipline and governed by common standards of work and working conditions.

As a phenomenon operating within the framework of modern industrial system the working-class method of "restriction of output" is a habit of thought acquired through contact with the discipline of modern business enterprise which imposes on all that come under its influence the necessity of getting without serving. In modern Christendom men do not go into business "for their health," nor do they seek out employment to fashion and produce goods. The purpose of work is to get wages as the purpose of business is to "make money." By the test of money and prices, scarcity of product and shortage of labor are blessings without disguise, since the one condition is good for business, and the other, good for the workers. Through the magic of the price system the loss of one is the gain of another and the hunger and destitution of the multitude is transformed into private profits and higher prices, so that business profits and prosperity are not necessarily synonymous with national exuberance or welfare of the masses. On the contrary, private gain and national grandeur feed on the misery and privation of the public.[2]

Conversely, to secure a tolerable measure of comfort and contentment for the large masses often involves heavy private losses and often the sacrifice of business solvency; for example, it is becoming more and more evident in these times of reversion ("reconstruction") that the degree of success or failure of the war-time food, fuel, and railway administrations was in direct proportion to the degree of sacrifice of or subservience to the interests of private business. The efficient transportation of troops and war materials, for instance, was made possible only at the cost of handsome railway receipts which resulted from the elimination of cross freights and the embargo on luxurious private trains and cars, not to mention the enforced retirement from their cynosures of the bewildering multitude of railroad presidents and office holders. On the other hand, the case of a young deputy fuel administrator in one of the larger middle western states serves as an object lesson, illustrating the extreme risk and hazard of an absolute and conscientious subordination of business profits to community welfare which came to be professed as a rule of conduct during the war. In this instance it happened that a large coal operator, who was at the time serving his country for a dollar a year, was more interested in an exclusive market for winter vegetables which required the use of several carloads of coal than in transportation of troops and war equipment. The young fuel administrator, by the scrupulous but indiscreet application of war-time rules governing the distribution of coal,

[2] "The contrast—which does not become blurred by familiarity with detail, but on the contrary becomes more vivid as the outlines are filled in—the contrast between the prosperity, on the one hand, of the most prosperous of all the communities of our western civilization, with its vast natural resources, the generous fostering of government, the human energy, the technical development, the gigantic tonnage of the mines and mills, the enormous capital of which the bank balances afford an indication; and on the other hand, the neglect of life, of health, of physical vigor, even of industrial efficiency of the individual" (worker). *Pittsburgh Survey*, pp. 3-4.

prevented the diversion of several carloads of coal for such a purpose, though to the operator the coal for this purpose had a higher *market* value than the comfort of the east-siders in New York or the life of a dough-boy in the trenches. The young fuel administrator was presently relieved of his responsibilities presumably "for indiscretion in the conduct of his duties" and was drafted into the army.

This somewhat disjointed and more or less anecdotal recital of incidents in the conduct of modern business and industry has seemed necessary in order to emphasize the distinction between money gains and price returns—the real ends of business and industry, on the one hand, and the production of goods and personal services, the supposed ends of business and industrial activity, on the other. It would serve no good purpose here to enter upon a recital of the circumstances which have attended this subversion of the end and aim of economic activity. Let it suffice to point out that the modern conception of welfare in terms of price equivalents is so well grounded in the habits and practices of modern civilization that not only does the notion find expression in the daily conduct and manner of life of all classes of people but that it has also been crystallized into one of the fundamental economic doctrines of modern times and is to be found in articulate form in the theoretical formulations of the common run of economists.

LIMITATION OF SUPPLY AND INCREASED PRICE

The fundamental problem in current orthodox economic theory is the problem of value and the point of departure as well as the final resting place of this problem is the theory of marginal utility. According to the marginal utility theory of value, given the human desire for a commodity, the utility of the commodity to the individual is to be measured by the utility of the marginal increment of the commodity in question. In the nature of the case, the greater the number of these increments the lower the marginal utility and the lower, therefore, the marginal utility of the commodity to the individual. In other words, the greater the scarcity of the object involved the higher the esteem or worth in which it is held by the individual. As a further corollary of the main proposition it is held that the individual's own estimation of the goods constitutes the real income of the individual; that is to say, the question of the utility of an object is a matter for individual estimate and, therefore, individual, "subjective" psychology. In other words, income in the final analysis is "psychic" in nature and character.[3] The unavoidable conclusion of the argument then is that the less one has of goods and services, the greater the marginal utility of those goods and therefore the greater the individual's "psychic" income. So that whereas the common sense view of welfare would have it that half a loaf is better than none, according to the logic of current economic theory fortified by business practice, half a loaf is better than one, or that the Spanish *caballero* who stinted himself and finally died of starvation in order to maintain a well-fed and well-groomed door keeper is "psychically" better off.

"To man propose this test
Thy body at its best
How far can that project thy soul on its lone way?"

[3] *Cf.* Fisher Irving, *The Nature of Capital and Income*, Chap. X.

As has been intimated more than once in the course of this discussion, the limitation of supply to enhance the price is a normal and legitimate business practice by business men. The modern captains of industry—those whom "God in his infinite wisdom has placed to watch over the welfare of the community"—through careful training and long experience have been emancipated from the notion of viewing welfare in any other light than that of price equivalents. Recently, however, the business method of turning an honest penny has affected the methods and policy of the working classes as well.

Although the method of the restriction of output has been on the trade union statute books as a means of standardizing wages and working conditions, not until within quite recent years has it meant more than trade union rules regarding apprenticeship and membership. At the present time, restriction of output refers to the wide-spread and menacing practice of what may be characterized as the "conscientious withdrawal of efficiency" by the working classes regardless of trade union affiliations. It is the art of substituting salesmanship for workmanship which the working classes have learned from the employers and are applying as wage workers. It is the strategic manoeuvering of the working classes to sell their time and energy for the highest price possible. It is the policy of enhancing the price of labor by limiting the supply.

Among the many preoccupations that beset the mind of the modern working man is the belief that, through organized effort, the economic and social conditions may be altered to the advantage or disadvantage of one class or another. There exists the conviction among the working people that the problem of distribution is a problem of price manipulation and that it is all a matter of human arrangement rather than the result of immutable and pre-existent economic laws which bind mankind and out of which no one can stir. One method of converting a wage bargain to one's advantage in the view of the worker, is, therefore, the deliberate and conscious restriction of output. The worker's idea of stock watering is to dilute one's labor power by giving less service for a stipulated wage.

THE TRADE UNION THEORY

Another of the business principles which the trade unionist is coming to appreciate more and more is the principle of patrimony or vested rights. The institution of private ownership is hedged about and protected by a legal system of which the foundation is presumed to be a balanced arrangement of rights and obligations. For the most part, rights are of positive character, are impersonal, and have to do with property; obligations are of negative character, are personal, and have to do with persons. The net outcome of this general system of law and ownership is that the possessing classes are vested with positive rights and with little or no obligations, while the dispossessed classes are blessed with obligations and with little or no rights; for instance, the law recognizes and enforces the right to the use and enjoyment of an item of property by the owner. It also recognizes and enforces the obligation of persons not to interfere with such right but the law does not recognize and therefore cannot enforce the right of an individual to a livelihood. Livelihood unless attached to an item of property is not a legal right but a personal obligation at best.

The modern trade union appears to have overcome this discrepancy, however, by the same logic and pettifoggery which has invested property rights with stability and respectability. By way of an offset to the property rights of the owning classes, the trade unionist invokes the patrimonial rights of the worker in his particular trade and particular job. Consequently, any move whatever, such as innovations in the processes of production and introduction of machinery, which disturbs the "established expectation" of the worker with respect to wages and conditions of employment is conceived to be a violation of the vested rights of the workers. Similarly, anyone who has not attained his place and position in the trade through the regular channels of apprenticeship and trade-union membership is regarded as an "imposter" a "quack," and deserves the contumely of mankind much the same way as one who has come into possession of an item of property through deceit and thievery. At any rate, it is in this light that the trade unionist views the situation.

The trade-union theory of vested rights and the less articulate but more formidable theory of "conscientious withdrawal of efficiency" operate to "restrict output" and "retard progress." But modern trade unionism partakes of the nature of business enterprise which implies that its members are more interested in wages—price per hour, per day, per week—than in output of goods—tons and yards per day, per week, per month.

Modern industry is controlled and managed by a small group of the propertied class who are at no time and at no point in contact in anyway with the mechanical and technical processes of production but who, nevertheless, are secured in their use and abuse of the usufruct of the industrial system; that is to say, the managers of modern industry and the guardians of the community's welfare are in the position of absentee owners without responsibility to God and without obligation to man.

So long as the working population remains in blissful ignorance of the magic potency of business principles to make something out of nothing, the community may be tolerably assured a safe margin of subsistence, despite the continuous interference and pestering of business men with processes of production. But with the taste of the fruit from the tree of knowledge the working classes are gradually assuming the rôle of absentee workers and are falling in the position of irresponsible agents in emulation of the absentee owners and their irresponsible principles. Under these conditions, notwithstanding the unlimited natural resources and the unprecedented advance in the arts of industry, the existence and welfare of modern civilized communities is likely to become precarious.

All the while the disinclination on the part of the wage earners to produce anything but wages grows with a growing distrust of their well-wishers—the employing classes, the social uplifters, and the reformers, and so long as the price system endures there seems to be no help for it. Moreover, the practice of "conscientious withdrawal of efficiency," engendered and stimulated by modern business principles, is likely to become habitual and enduring even to the disappearance of the narrowest margin of production over cost. On the other hand, the trade-union theory of the workman's patrimony in his trade and position is not likely to prove of serious consequence, since new inventions and mechanical re-

finements are destined to render nugatory and obsolete the "skill, judgment and dexterity" of any one worker in relation to another upon which rests the trade-union theory of vested rights. So that with the gradual disappearance of the distinction between skilled and unskilled trade, the conventional rules regarding apprenticeship and trade union membership are most likely to be discarded.

Allowance is to be made, of course, for the extension of such devices as scientific engineering, bonus systems, welfare work, educational and philanthropic adventures and the like, to keep the industrial system in repair, and it may well be that some device may yet be found to preserve the price system and at the same time meet the bewildering demands of an increasing standard of living throughout the civilized world. At best, the devices hitherto tried cannot be said to have met with anything like a crowning success. Of these devices, scientific management and efficiency engineering gave perhaps the greatest promise, but these devices have so far worked to the greater advantage of the employing classes—at least, so the workers think—and to that extent they have failed to enlist the coöperative support of the workers.

More recently a new psychology, the psychology of the working classes, has created considerable excitement even among intelligent and soberminded people as promising to solve the problems of modern industry and to speed up production. Briefly stated, the new psychology proceeds on the assumption that the mental processes of the working classes must be studied with a view to discovering the evils which ail them and subsequently to set them right. The industrial problem in this view of the case resolves itself into one of mental attitudes. The thing to do, then, is to induce in the workman the proper mental attitude.

"The mind in its own place
Can make a hell of heaven and heaven of hell."

WHAT IS PRODUCTION

Production is as much a question of what to produce as it is a question of the amount to produce. Under the system of money and prices this question becomes irrelevant, since the same pecuniary test is applied to the questions of what to produce and of how much to produce. Production is production of price returns—"proceeds." Any economic activity whatever that falls short of a favorable balance in terms of price, by that much falls short of being productive.[4] Restriction of output is productive by the test of modern business principles. It is hallowed by time and sanctified by usage. It may, therefore, require something more than the pursuasive eloquence of pulpiteers or the skillful legerdemain of the so-called psychologists to induce the working classes to high thinking and right feeling in order to rescue and rehabilitate the "instinct of workmanship." Just now, under the system of price and business enterprise the path of least resistance leads in another direction.

[4] Cf. Davenport, H. J. *Economics of Enterprise*, Chap. IX.

A Labor Attitude Toward Production—An English Point of View

By W. A. Appleton
Secretary, General Federation of Trade Unions (English)
President, International Federation of Trade Unions

WHAT do we mean by labor? What is the aim of production? Is maximum production injurious to the workers?

One has only to read the newspapers, to listen to the political orators or to study the origin and aims of strikes to realize how confusedly and how carelessly most men think about these questions. Are the common conceptions concerning them justified? When we speak of labor do we consciously mean only that manual labor employed upon a piece of metal or a piece of wood? When we think of production do we consider only its effect upon those profits which can be stated in cash percentages? Do we really regard maximum production as necessarily creating an unemployed and devitalized proletariat.

What is Labor?

What is labor? The answer given by the Marxian socialist is euphonic but not convincing. Grandiloquently he replies that labor is the source of all wealth. Is it? There are people who think that the Almighty had little to do with the creation of wealth. Unless the geologists and the physiographists are altogether wrong, he preceded the capitalist, the miner, the brickmaker, the carpenter, and even the agriculturalist. The Marxian is wrong, of course. Labor is the operating force rather than the source or creative agency. This is proved by the existence, in different parts of the world, of immense reserves of wealth which neither capital nor labor have yet touched.

The exact definition of a term which includes infinite possibilities is difficult. He who essays definition may involve himself in a morass. In making the attempt, I fully realize the danger. Definition, however, is necessary if clarity is to be obtained.

It appears to me that labor is that inventive, initiative, constructive and manipulative capacity which, applied to materials, conditions and requirements, extracts, makes and distributes those things which are essential to human existence, enlightenment and happiness.

Such a definition may be imperfect, but it takes cognizance of the inventive labor of a Watts or an Edison, and the efforts of those who conceive businesses, provide capital, erect buildings, organize manipulative and technical personnel, and discover and exploit markets. It provides also a niche for technical staffs, for salesmen and agents. It recognizes manual labor, both skilled and unskilled, whether it is employed in fashioning materials or distributing them. It does not ignore the possibility of extending credit to that political effort which keeps open, or should keep open, national and international highways and opportunities.

This conception of labor immediately challenges many popularly accepted theories. It also invites comparison as to value and remuneration.

The Manual Worker

Should each factor in the scheme of production be treated equally? If there is differentiation, in whose favor should it operate? Should the inventor, the capitalist, the organizer or the manual worker have preference? Each will answer these questions according to his understanding and his circumstances. To me it seems just that the manual worker should be favorably placed; that his share of the profits of production should be generous and assured, and that his social obligations, to his family and to his fellows, should be recognized when his share is determined.

There is one eternal and immutable stipulation. The manual worker must produce value in return for the value he receives. Whether his share is paid in wages or in goods is immaterial to the question. He must replace this share by producing what will balance his personal account, replace waste, provide reserves, and maintain the state. If the manual laborer, coöperating with his fellow laborers, does these four things, the face value of the wages he receives and the hours he works are of little moment. He can have a hundred pounds per day for a two-hour day, provided the value of the hundred pounds to the community is produced.

Everything depends upon production. Standards of living cannot be raised, nor can existence be maintained unless mankind accepts this contention. Eloquence, rhetoric or legislative action, whether acting separately or collectively, cannot make the corn grow or build houses, or feed children or clothe humanity. Only working and thinking can provide the things essential to life and comfort. The degrees may differ, but the fact remains constant.

Manual workers will individually admit this, but there is no mistaking their fear of the effects of what has been described as over-production. To this they have been taught to attribute under-employment and poverty. Produce too much and capital has no further use for us, is the phrase with which they defend "ca' canny."

Does Over-Production Cause Unemployment?

Is it true that over-production creates unemployment? Has there ever been over-production of those things mankind really needs? Have we really produced too many houses, too many boots, too much food? Are we not rather confusing production with capacity to purchase? Shoemakers have been walking about unemployed while their children went to school barefooted. Garment workers frequented the Labor Exchange while their children were ill-clothed, and other occupations were similarly suffering. If the consumers, who are the whole people, had been able to buy, there would have been no unemployment.

Here lies the great danger of today. Taxation, imperfect methods, human misunderstandings have increased the cost of production and correspondingly decreased the capacity to purchase. The extent of this decrease is not yet apparent. Reserves have been encroached upon, currency has been inflated and credit has been exploited in the vain hope of escaping the fact. These devices have clothed the problem as with a mist but they have left it unsolved. It can only be solved by all the men who work facing economic facts and combining to produce what all men need.

Can they do this safely? Will those who conceive, organize and capitalize do their parts? Will they adopt meth-

ods of production which give maximum results in goods or services with minimum strains upon men and women? Will they arrange that the industries for which they are responsible shall bear the cost of accident, of sickness and of unemployment, which under any scheme must sometimes be unavoidable, as for example when changes of method are introduced, or changing demands necessitate changed commodities?

There is plenty of idle talk about the remuneration of capital. This arises partly from the habit of advertising profits and interring losses. One hears often of the fortunes made but seldom of the fortunes lost. There is the added error of stating profits in aggregates instead of in percentages of capital employed.

Capital does, however, sometimes receive remuneration out of all proportion to the service it renders. Sometimes it is foresight which makes these larger profits; sometimes it is sheer luck. In either case, the effect upon the imagination of the mass is a bad one.

To remove misunderstanding and to secure immediate productive results should be the aims of every man interested in human well-being. Rivalry and antagonism between manual workers and other workers and capital must be replaced by that intelligent understanding which comes from joint and honest handling of difficult problems.

The alternative is famine and suffering such as the world has not yet seen. Not only will the area and numbers involved be greater, but the people are more nervously developed and consequently less able to bear calamity. It has been an appreciation of this danger which has led me to ignore the personal danger, and during the past five years to point out the futility of nominal wages, and while pleading for a fair day's pay, to insist upon a fair day's work.

Labor and Production[1]

By Horace B. Drury

Formerly of the Department of Economics and Sociology, Ohio State University

THE desire to achieve something is one of the most deep-rooted of human instincts. How keenly every normal man, whether he be a millionaire or governor, or one of the masses of men whom one passes on the street, or meets at some public gathering—how keenly every normal man rises in spirit at the thought that he has personally accomplished something, or that he has himself had some substantial part in doing that which he or others consider to be clever, or well done. To bring to pass that which he has set out to do, to overcome in triumph some private—or better yet a public—obstacle, the ordinary man will often undergo serious deprivation; and, it may be, struggle on for years without wholly giving a thing up. But if finally he is successful, the whole struggle will be looked back on as a great event and a great pleasure.

It is, therefore, only by a strange perversity of things that a large proportion of the people who work today find themselves compelled to neglect one of their most natural human instincts, and spend their lives in doing that in which they have little or no interest. It would indeed be the greatest gain that could possibly come to labor for it to find some way in which it might have a part in that great effort for the production of goods, for which industry exists and in which labor's body is already engaged. For labor would then, in fact, be free; industry would be its enterprise; men would go to work with the idea of accomplishing something instead of because they were driven. Work would have more of that spirit in which union officials direct their own organizations; in which house owners improve and beautify their own grounds; or in which big industrial leaders plan for the development of large ventures. More than this, labor would be working clearly in the service of society; it would have the satisfaction of knowing that like the soldier in battle or the friend who lends a helping hand, it was contributing to the welfare and progress of the world and could expect as much from all others.

The infusion into industry of the spirit of coöperation instead of that of conflict; the creation of such conditions that men may find a great satisfaction in pitching in and helping things along rather than feel themselves impelled to hold back is not a simple matter. Circumstances not of labor's making are chiefly responsible for the present lamentable situation by which the wills of the people who make up the rank and file have been so generally turned against the wills of the people who normally should lead. But the responsibility for present conditions is not the matter of chief consequence. The important question is: How may matters be remedied, and, in fact, improved? It must be granted that the issues which have arisen between labor and its employers are very real ones; but, even while labor continues to protect with all the vigor in its power the special interests of its members, there are, we believe, certain very definite steps

[1] Reprinted from the March, 1920, issue of the *American Federationist*, by permission of Samuel Gompers, President of the American Federation of Labor.

which labor itself might well take towards winning for itself greater recognition as a co-partner in production.

The first essential question that rises in this connection concerns the extent to which a definite trade union movement such as the American Federation of Labor would be justified in throwing itself into a campaign for greater production. To dispose satisfactorily of this matter, it will be advisable to recall briefly the origin of the labor movement and draw a few conclusions with respect to underlying motives, aims, and logical lines of development.

THE MODERN LABOR MOVEMENT

The real nature of the modern labor movement, and what it may normally be expected to do, will best be understood if it be considered that the labor movement is, in origin and fundamental tendencies, a reaction against the too strictly mechanical and profit-making conception of industry, almost universally adhered to not so long ago.

Owing to the epoch-making inventions and intensive business enterprise of the eighteenth and nineteenth centuries, the comparatively simple life of earlier periods had, by the middle of the nineteenth century, practically disappeared. In its place there was fast rising the dazzling modern world of towering cities and pulsating factories, of far-flung systems of transportation and communication, and a myriad of mechanical inventions. The rapidity of the growth of this great new structure was largely due to the completeness with which individuals were allowed to seek their own ends, and the singleness of purpose with which the powers of science were brought to bear upon whatever project was once decided on. Unfortunately, the great mechanical improvements of the new age and the unheard of piling up of wealth were not, for the most part, based on any systematic study of what society or human nature really required. On the contrary, it was rather the typical thing for an engineer, thinking only of attaining some mechanical end, to construct a tool or a system of production which was in itself little less than hideous, or for a business man, thinking only of profits, to attempt the enslavement or exploitation of large numbers of his fellow men. In a word, in spite of the unprecedented brilliance of our modern civilization, it has been and still is filled with much waste and misery, with much effort that helps one man but injures another, with a lamentable lack of teamwork and coöperation.

It may be said that it was owing to a widespread loss of confidence in the sufficiency of the old theory that each individual should work only for himself that the modern labor movement arose. The basic philosophy of this movement holds that, instead of each person fighting only for himself, men should organize and coöperate so as to attain by direct and conscious, rather than by roundabout means, the betterment of their condition and the enrichment of their common life. Instead of first raising the question as to how an individual or an industry might make profits, or as to how some special mechanical end might be accomplished—as was the rule during the last century—the organized labor movement holds that the first thought of men should be for the basic needs and desires of mankind; and the second consideration should be, how may these wants and aspirations be most directly and speedily attained.

There are, of course, a great many things both good and bad that might be set down with regard to the more particular beliefs and principles that have at times guided all or a part of labor's leaders. But granting that this

is the essential spirit, as opposed to the more or less changing tactics that have underlain the development of the organized labor movement, the proposition would seem to be self-evident that there are just three distinct roads along which labor may effectively and consistently advance in its effort to attain what are, in fact, its main ends.

The first possible avenue of advance for the labor movement may be described as the more abundant production of material goods. It goes without saying that labor will not be satisfied until its own people are able to enjoy many of the comforts and luxuries now obtainable only by the rich and well-to-do. But the standard of consumption of the many cannot be raised anywhere near that of the few unless production is maintained and is, in fact, very greatly increased.

The second basic need of labor, and the one most generally recognized, is that at least a proper share of the goods which are produced must go to the actual workers. This proposition is also so obvious that merely to mention it is to demonstrate its truth. It has already been noted that one great failure of modern civilization has been the extent to which large masses of people have failed to share as they should have shared in the general progress and prosperity. The labor movement has from its very beginning, therefore, persistently endeavored to secure for the workers a fuller measure of the product created by industry.

The third and last consideration which needs to be mentioned here as necessary to the full development of labor's program is also one that labor very definitely understands. And that is the principle that no matter how great the volume of production or how just the distribution of goods, society, and especially labor, will move backward if the work processes or the conditions surrounding employment are such as to be physically, mentally, or morally destructive. Another essential task of the labor movement has therefore been—and always will be—the direct improvement of working conditions and the elevation of labor to an honorable and agreeable status in society.

As between these three great fundamental tasks which would seem to be the necessary basis of the labor movement, it would be improper to say that any one is of subordinate importance. For complete failure anywhere would mean disaster, and advance along all the lines that have been indicated is desirable.

Nevertheless, it is our purpose here to develop the proposition that in proportion as the labor movement becomes more thoroughly organized and unified, in proportion as it is able to rise to a grasp of its more fundamental needs, the main emphasis must gradually be shifted from the second and third of the three ends mentioned to the third and first. In other words, where in the past the chief emphasis has been on wages, with second place given to working conditions, in the future the improvement of working conditions will continue to grow in importance, but more important than either wages or working conditions, if importance be measured in terms of attention required, will be the problem of increasing production.

In reaching the conclusion that the labor movement of the future must tend to concentrate on the task of furthering production, two assumptions have played a leading part. The first assumption is that in a very considerable portion of industry labor either has gained by this time, or is in a position where it hopes that it will soon be able to gain, not far from as large an income as the state of production will

permit. To the extent that this assumption is well grounded, it is evident that the chief limitation to further wage advances must fairly shortly become the actual earnings of the various industries involved.

We do not mean by this that any one would claim that every class of labor has already obtained the exact wage to which under existing circumstances, it is entitled. It may even be true that labor as a whole should receive a substantially larger share of the product of industry than the present system yields. It must be entirely clear, however, to any one who has observed the size and scope of the undertakings recently entered into by the labor movement at home and abroad, that labor has in recent years made some very great strides forward. It is at present in so strong a position that, provided it does not destroy its power by trying for things inherently impossible, it should be able to clear up very many of the injustices which in times past were the marks of a system of production dominated entirely too exclusively by commercial and employer interests.

The establishment of justice in distribution is not to be regarded as contingent on the success of any one particular plan. One program, that actively pushed by the conservative element in the American Federation of Labor, holds that future gains in production may best be gained by labor as the result of the perfection of the system of collective bargaining. If the federation plan should make headway in anything like the degree indicated by the experiences passed through during the war, it is not difficult to see how ever stronger unions might, in the course of their periodic trials of strength with the employers, take just about such a part of the profits of an industry as the state of production and other conditions in the industry would permit. The insurgent group in the labor movement, on the other hand, believes that this is too roundabout a method and that the way out will be through a more conscious and definite partnership between employers and employes under which it can be understood at the outset how the gains are to be distributed, and under which all can share both in responsibility and in reward. Others, mainly outside of the unions, hold that at least a part of the gains from greater production can be made to go directly to labor by way of a system of regulation of profits, or taxation, that would lower prices or increase the volume of free goods furnished by the state.

As between these various plans, there may be much difference of opinion as to relative merits or defects. The point which we wish to make here is that, underneath them all, there can be no mistaking but that there is a very strong movement of society towards some system of industry that will come much nearer to granting to labor that which labor produces, than has been the case heretofore. If this underlying fact be recognized, then labor's interest in making production as great as it can be made is too obvious to need further comment.

Members of the American Federation of Labor who are now engaged in many prolonged and bitter struggles not only over questions of wages but over the whole matter of the life and status of the union may cry out here that we are saying entirely too much; that the battles of labor are, in fact, waxing hotter rather than easier, and that this certainly is not the time to talk glibly of production. If labor could do only one thing at a time that might indeed be so, but there is no reason why labor in taking new thought should weaken itself in the least as regards its present activities. On the

contrary, the very intensity and determination back of the struggle which it is now waging should make labor look ahead and prepare itself for exercising the responsibilities that would attend success. Labor is, on the whole, fighting an offensive rather than a defensive war. Why carry on such a campaign unless one expects or hopes to succeed? And if one expects or hopes to succeed, why should one not display one's confidence to the world by preparing for it?

Preparation for success—a revamping of the labor organization so as to make it strong in the art of facilitating production as well as in that of war—would in fact tend mightily to bring about that very state of success. If labor cannot be expected to interest itself in production unless it participates in the gain, neither will the public be willing that labor share actively in the management and rewards of industry, except as it becomes evident that such a rearrangement of things will mean more goods, greater welfare, and a sounder industrial system. For labor or any group of men to imagine that they can overturn or modify the existing system unless something better is built up in its stead would be the height of folly. In proportion, therefore, as labor believes that its cause is fundamentally just and that its place in industry is entitled to a basic and lasting recognition, it should be the more bent on building up such constructive policies as will make its organization a real support and a mainstay of the production system. That is, whether labor's right to a full share in industry's proceeds is viewed as all but won, or whether it is still considered a goal painfully to be striven for, there would seem to be no question but that it is altogether to labor's interest to join forces with those fighting for greater production.

The other fundamental assumption underlying our conclusion that labor must turn its attention towards matters of production is that labor is sincere in its indictment of the aims and methods of the older capitalistic system, as those have been outlined near the beginning of this article, and that in exercising power itself labor will aim to be more systematic and farsighted in its effort to remove basic weakness, and strive more consciously to build up a fundamental economic prosperity. As against this second proposition it may be argued, and with some show of reason, that many individual workmen, like many individual capitalists, will continue to act on the theory that the more they can grab for themselves the better off they will be. They may suppose, and in times past they undoubtedly have supposed, that no regard need be taken either for society or for other workmen, that no attention need be paid even to the matter of their own long-run prosperity. But here we are speaking of the labor movement, and the labor movement of today as such has, as has already been pointed out, definitely dedicated itself to the ideal of organization. Not only is it held that workman should unite with workman and trade join hands with trade, but the method of dealing with the employers themselves is to be put on a new footing. The dominant labor movement of our times is thoroughly committed to the principle that negotiation should take the place of uncompromising hostility. Joint agreements that will reconcile conflicting interests, but forward mutual prosperity and advantage, are the essence of its present program.

PRODUCTION THE MAIN INTEREST OF LABOR

But a little reflection should make it clear that labor cannot make a success

of its program for world organization and for the mutually advantageous relationship of labor with capital, unless it first comes to the forefront as the advocate of measures which will be of universal advantage to all concerned. It must break completely with the old individualism which till now has colored the minds both of employer and employe. Organization and organized bargaining are in their very nature a harmonizing of forces which were formerly in conflict in order that some greater end held by all and of advantage to all may be attained. Hence, concern for production, the one great common end of industry, must in the very nature of the case become the chief driving force upon which labor must depend if, indeed, there is to be any real life or permanency to the various alliances, great and small, which it is labor's chief ambition and function to set up and maintain.

In short, in proportion as the principle of labor organization is perfected and its branches are extended into all trades and all countries, less and less room is allowed for fighting, and greater and greater will be the demand for constructive work. From the very fact that many formerly opposed groups will have been brought together into one fold, the labor group, above all other large bodies of men will be compelled to think in terms of common welfare. If, to the acquisition of fairly complete external power, labor indeed adds the achievement of comparative unity within itself, further emphasis on mere increases in wages, without a corresponding increase in production, would simply mean that one group of labor would gain what another group of labor would lose—an altogether impossible and unprofitable program for labor to advance as its main goal.

Is it not reasonable to conclude, therefore, that as time goes on a new emphasis on production and efficiency, with accompanying attention to working conditions, is the only logical outcome? Should not the positive enrichment of the world in all those articles and services for the lack of which the workers, more than any other class of society are now in such great need, be the ultimate and greatest function of the united and perfected labor movement? It is one thing, however, to lay down a general principle as to what is desirable, and sometimes quite another thing actually to accomplish its working out.

The second problem that needs to be considered in this connection is, therefore, the more detailed and practical one as to just how the labor movement, especially the organized labor movement, is going to help increase production. Assuming that labor accepts the challenge of the times and tries so to shape its organization and activities as to help remedy the world's crying need for greater production, just what in fact can it do? What can labor as such accomplish that could not be done equally well or better by those already in charge of industry?

Perhaps the most fundamental thing that organized labor as such could do would be to advance as its own the general philosophy that production is the goal of industry; that it is the special aim and opportunity both of labor as a body and of each individual worker.

This matter is mentioned as most fundamental because, midst the heat of industrial conflict, there is always danger that the opposite philosophy will in fact gain ground. Forgetting that it is upon the product of labor that labor subsists, workmen are very apt to assume that production is merely of interest to their employers. Groups of men in this shop or industry or that may even fall into an attitude of hold-

ing back from their employers whatever of their potential product they can. If now by a vigorous campaign organized labor could effectively stamp out this tendency, first by fighting as heretofore the unjust conditions which provoke men to revolt and then by teaching the supreme value and necessity of production, it would in fact remove the greatest single obstacle to the attainment of a mutually advantageous efficiency. More than this and better than this, it would at the same time be performing a special spiritual service for all labor. For by making it possible for each employe to feel that he is working in a great cause, it would help put purpose into his life and permit the admission into it of the adventure of personal achievement.

The spread of a labor philosophy emphasizing production would come most appropriately from organized labor, and indeed it is doubtful whether it could well come from any other source. The leaders of organized labor are elected by the rank and file to look with special care into all questions which may affect labor's welfare. They speak with authority and for the most part with freedom from suspicion, a matter of great importance when it comes to trying to influence the feelings of labor on a subject so delicate and so influenced by past impressions. The officers and members of the unions would, in short, be the best possible persons to engage in educational work along this line, assuming, of course, that they shall first have been themselves convinced that the end is a worthy one.

There are many ways in which a union might spread interest in the problem of production. It will be necessary, however, to do more than merely make the bald assertion that production is necessary and desirable. Real conviction will come to a group of workers only when they themselves appreciate the function which their industry in general and their jobs in particular are performing for industry and society. This is a matter for prolonged demonstration and explanation. Other agencies besides the union will be of help. Yet the quickest and most genuine conviction will be reached only if the leaders of the men themselves take up the work.

RESPONSIBILITY OF LABOR AND CAPITAL FOR STRIKES

Turning now to an enumeration of the more concrete economies and efficiencies which labor, once it adopted such a general philosophy, might introduce into industry, partly through the moral stimulation of individual workmen but preferably also as features of a well thought out collective program—the first and most obvious waste that labor could help prevent is that caused by strikes. Labor alone cannot solve this problem. But neither can it be solved without the help of labor. Without suggesting for a moment that labor should at this time give up its right to strike, it may still be pointed out that a reduction in the wastage caused by strikes and lockouts would be greatly facilitated if both labor and capital would keep in mind the real cost of such occurrences. If both labor and capital will only realize how seriously both suffer from interruptions of service, not only in the immediate loss of wages and profits but in the general demoralization of industry and the loss to society of the goods which otherwise would have been produced; if labor and the employers could only get together, either alone or with the public, and make a genuine effort to see just how far differences can be worked out without resorting to strikes, a solid foundation will have been laid for the development and exe-

cution of more peaceful and less wasteful methods of adjusting industrial disputes.

The constant maintenance of productive operations is daily becoming of more and more vital importance to modern industry. The loss caused by a strike is usually much greater than the loss to employers and employes in the particular industry or branch of an industry involved, great though that may be. For in proportion as the world's industry becomes more complicated and its parts fit more perfectly into one another, cessation of work in any one department is bound to cause greater and greater disorganization. At present we manage somehow to live through strikes. But if industry is ever to reach any decidedly higher efficiency, much of that efficiency will consist in so planning industries in relation to one another that where one industry finishes a product another will take it up, without costly storage or duplication of facilities or processes. We can never reach that higher degree of efficiency in which all industry will run as one plant, enriching the world almost automatically with a flood of goods until labor and, in fact, everyone connected with industry is thoroughly filled with the idea that the plant must keep running and every person must be faithful at his post.

The matter of strikes has been taken up first, because at the present moment it happens to be uppermost in the public mind. But there is a second and, in the long run, much more important concrete service which labor might render production, and that is in the daily offering by each individual of all the service of which he is capable. Consider for a moment the fundamental difference between an industry in which labor conceived itself as driven to produce goods in which it has no interest and an industry in which labor has really taken hold of the fact that production is its own most cherished end. Suppose that production was in truth regarded as the gain of labor. Suppose that he who by his ability or earnestness surpasses the general average was regarded by his fellows as a benefactor, as a comrade to be honored and emulated. Suppose that the zest of sport and the enterprise of business, the ardor of patriotism and the good humor of friendly association were all thrown together and allowed free play about the workshop; can anyone doubt but that production would spring up into an entirely new life and output reach heights hitherto unattainable?

A NEW SYSTEM OF PRODUCTION NEEDED

Everyone who has ever studied a group of people at work, whether they be school children, business men, or day laborers, knows that the potential capacity of individuals varies greatly. If the work at hand be thought of as something to be shunned, then the abler and the average individuals will hide behind the weak ones, and these last will in self-defense maintain their own and the general standard as low as possible. But if an abundance of good work well done is conceived in its true light as in reality an enrichment of mankind, of one's associates, and of one's self, then why should there be any limit at all to the skill and earnestness which men ought to throw into their work? Why, indeed, should production not be made to boom? Why should not the weak do what they can, the average come up to average possibilities, and the able lead and guide, and, as far as it is possible, advance production to higher and yet higher levels? Assuming always that proper safeguards have been established to prevent overwork or oppression, why should not the notion of an industry

freed from friction and suspicion and dedicated to achievement be made the goal of labor? A system of production filled with this spirit would surely be a revolutionized one. Its capacity for output would be entirely beyond the range of our present experience.

Yet such a change, great as it would be, is quite limited in its possibilities compared with the changes which, with the help of labor, could be introduced into the technique of industry. As the last point of our analysis, it may be pointed out that after all, what is most needed in industry is not continuous work, or more work, but the elimination of toil. What man really wants is to achieve great and satisfactory results with the least possible effort. But this means that methods must constantly be overhauled and improved. The more rapidly an industry proposes to advance the more frequent and drastic must be these changes in technique.

Now, unless a labor force is really interested in production, it is a very difficult matter to introduce changes in method. There is a tendency among all people to prefer to go on doing as they have been doing in the past. Besides, an innovation in the method of work may imperil a man's livelihood. Unless care is taken, it may reduce his income and lower his standard of life. Hence, both for instinctive and for thought-out reasons, persons not vitally interested in production are apt to hang back from helping along with what would really be important improvements, thus seriously retarding the establishment of production on an efficient basis. Hence the importance of labor's being thoroughly convinced and won over to a support of the principle that in the long run improvements are an advantage and that labor's only precaution should be to see that, along with the basic good, no element of injustice accidentally slips in.

It is not only desirable that labor acquiesce in the introduction of improvements. It should also be pointed out that labor is capable of being a very powerful instrument in bringing advantageous changes about. Not only can labor through its organization bring pressure to bear on employers to introduce improved methods and out of its energy and funds subsidize efforts along this line, but if the spirit of improvement and waste elimination pervades the ranks, it is possible for mind that is now inert to become active in bringing progress about. Suppose that every workman was striving to eliminate the useless motion or the unnecessary job. Suppose that those who handled materials and machines were each in their own manner specialists on production and ready with suggestions and action. It should be noted that increase in efficiency may proceed by a kind of multiplication, and that a little saving here and a little there, when joined together, may in the course of time reduce the total cost of production well nigh to nothing.

What the industry of the future should strive for is not a few leaders and a mass of slaves. Slave work should more and more be done by machines; unskilled labor should be reduced to a minimum. Man's function in industry should be the planning and designing of product and process, the utilization of mind in the effort to gain the mastery over physical nature. Only when all labor shall have been utilized to the utmost along these lines will the possibilities of industry be on a way to realization. But—it hardly need be added—to carry out all or any of this program, labor, both as individuals and as a group, must first have become really interested in the problem of production.

In conclusion, it should be noted that it is not to be expected that all these

improvements in industry and in production will be put through by labor alone. Employers must help, the government must help, the schools, industrial experts, and many other agencies must take a hand. The one most essential function that the world labor movement should perform is the endorsement of the basic philosophy that greater production is desirable. The one most necessary function for the national unions and the more specialized trade or industrial unions to perform is the establishment in each industry and in each work place of such an environment that each individual may find it possible and praiseworthy to give his best to his work.

Just how far beyond this organized labor should itself go, and how far the organization of production should in its details be carried on by employers and strictly management agencies, need not be considered in this connection. Here the matter will simply be left with the suggestion that the world seems now to be entering upon a more democratic age, when many things formerly decided by authority will henceforth be controlled by the interested parties themselves, or their selected representatives. This situation is in itself a direct invitation to the representatives of labor to take up actively the problems and responsibilities of production. In making production the object of their collective thought and the goal of their collective action, the leaders of labor will not only be helping along a most excellent and profitable cause, but they will also be adding immeasurably to the dignity of their office and to the status and fullness of life of all those whom they represent.

Coöperative Production[1]

By JOHN H. WALKER
President, the Illinois State Federation of Labor

THROUGH the farmers, grain dealers, fruit-growers and dairymen's associations, etc., the producers of the United States do a business of over a billion dollars of coöperative selling annually, although they produce as individuals on individually owned farms. There are many productive enterprises operated as coöperative, which are simply private joint-stock corporations such as the cooperage factories of Minneapolis, the shingle mills in the northwest, the deep-sea fisheries on the Pacific coast out of Seattle, Washington, cigar factories in Chicago, St. Louis, Philadelphia and Boston, a glass factory in Danville, Illinois, and numerous mines throughout the country. None of these are really coöperative any more than the coöperative effort of a large number of miners in one mine producing coal for the private gain of an individual coal operator or other workers working in the same way for the private owners of other industries would be coöperative institutions.

The nearest thing to real coöperative production in the true meaning of the term in our country is the packing house operated by the Seattle Coöperative Society. This society retails its products to the members through its consumers' retail coöperative meat markets. The best type of real coöperative production that is going on in this country is that in which families are coöperating in raising a garden patch, some chickens, a cow, etc.; where all help to do the work, and where all who participate in the enterprise share equally in its benefits, and where advantage is taken of no one.

Real coöperative production in the United States at the present time is practically non-existent. If the history of coöperative production, which is now being carried on on a large scale in almost every industry in some other countries where the coöperative movement is more advanced, is of any value as a guide, then it is as it should be in this country. This is so because real coöperative production has never been successful on a large scale in any other country in the world until retail and wholesale consumers' coöperative societies had been established, the people organized and educated, coöperative markets for the products of the productive enterprises estab-

[1] This article was submitted to Mr. Frederick C. Howe, late Immigration Commissioner of the Port of New York, who is a leading American authority on coöperation. He commented as follows:

"Walker is a pure Rochdale coöperative. He believes that productive industry should be built up from the consumers, and should be controlled by them at all times In other words, he follows the pure British model. My inability to add to or criticize this article is traceable to the fact that I do not know whether I agree with him or not. I accept all his principles and conclusions, but I have my doubts as to whether producers' coöperation is going to come from the consumers' end. I don't know. My own feeling is that it ought to be built up from the consumers' and producers' end, and the two groups then get together."

There is apparently a good deal of weight to the argument that under present conditions the coöperative movement has much more to expect from coöperation among consumers than it has from coöperation among producers.

THE EDITOR.

lished and adequate means of distribution accomplished.

The fate of the joint-stock company kind of coöperative production has been that, either because of the keen competition existing between private productive enterprises, inefficiency, incompetency, lack of loyalty or dishonesty on the part of those engaged in the so-called productive enterprise, it has failed. Where they have made a financial success of it, usually they have either restricted their membership and by specific action made it exclusive, or have raised the price of their shares to a figure which in itself is prohibitive. Thus the coöperative organizations have usually become ordinary private stockholders' corporations, operating for the personal selfish interests of those who have their finances invested in them, and getting everything that they possibly can from everybody else.

THE MEANING OF COÖPERATIVE PRODUCTION

Private profit must be eliminated and the consumer must own the productive enterprise, distribute and consume its products, and everybody, the producers, the distributors and the consumers share equally in its benefits, before we will have genuine coöperative production in the interest of the people. Through their retail and wholesale coöperative organizations, the people save for themselves and reduce the cost of their living by whatever the retail merchant and the middleman have been charging them for their services. Men and women are organized and informed on the practical operating economics involving and affecting them in their every-day life, so that they can understand every phase of the problems of industry and commerce, and their relation to all phases of government and act more intelligently and unitedly in their own interests in all matters affecting their material welfare.

These things within themselves are of great value, but it is in the operation of coöperative productive enterprises that the greatest saving is made in reducing the cost of living. Here also is introduced the greatest benefit which comes from coöperative institutions. This benefit lies in the new relationship which is created in industry between the owner (management) and the worker; a relationship which enables them to settle justly and permanently, practically every problem of industry that is causing injury and wrong. It is a check upon privilege, unearned wealth and irresponsible power which is used to impose injustice and wrong on others, and through it much of the misery, friction and strife at the present time may be avoided.

In such a coöperative relationship no person will have any material selfish incentive to try and impose any condition in industry that is unjust, either to the workers, the management or the owners. The cause for bribery and corruption on the one hand, and the betrayal of their fellows on the other will also disappear. The incentive will be to give to all the very best that can be given, because the owner and employer, the worker and management (from a material interest point of view) will be one and the same, and the problems in industry will affect each of them alike. Each will receive the same benefit from whatever is done to benefit the other in a material way, and in like manner all will be injured by anything introduced to the detriment of either worker, management or owner. And because at the same time, they will have the power within their own hands to settle all questions involved and affecting each and all of them, the wages or reward, hours and conditions of labor

and treatment will be the very best that can possibly be devised.

In the event of friction, because of differences of opinion in any particular division of the coöperative movement which they are unable themselves to settle, (when it is established and operating in this larger way) it will be settled by the general organization, where everyone who acts on the matter will be in exactly the same position as those who are involved in the dispute. Because of this position they will know every fact and detail in the case, as it involves and affects everyone concerned, and they themselves will be involved and affected by their own decision in the matter; injuriously, if they make a wrong decision; beneficially, if it is a correct and just one.

The best interest of everyone concerned in the matter will only be served by doing the thing that is right and best for all, and thus, for the first time, there will be an arbitration tribunal for the settlement of all industrial and commercial disputes; a tribunal whose honesty, whose knowledge of the facts, whose interest in doing the thing that is right and whose desire to do the thing that is right no one can question.

SOCIAL ADVANTAGE OF COÖPERATIVE PRODUCTION

There can be no doubt on the part of men and women who understand the problems of today that a continuation of the present situation means a continuation of the injury, wrong, suffering, misery, denial of education and opportunity to the great majority of the people on the one side, and to a continuation of the increase of unearned wealth, unjust privileges and advantage, which are too often incentives for dishonesty and dangerous powers, to a few on the other side.

Everyone who is human, who loves the human race and the things that are right, *who understands*, will work to bring about this new condition. Among its strongest recommendations is the one that in the interim while every coöperative grocery, clothing, shoe, furniture, hardware store, etc., is being established, any unjust acts of the private merchant will be revealed; on the other hand, if there are any wrong suspicions or convictions in the minds of the people with reference to them, they will be immediately dispelled. When both sides have complete knowledge of the question, the people will be able to compel the merchant who is doing wrong to change his position and to do the thing which is right.

This will be true in industry as well as in commerce, so that the most powerful influence in the world (public opinion) based on a sure knowledge of the actual facts, will be put in a position where it will be most effective to compel the employers and merchants to discontinue doing the things which are wrong, and to do the things that they should and can do but which they have not been doing. Since there is hardly a controversy in our governmental life today, either with reference to legislation, court decisions or actions of executive officials, but that has its roots in the material interests of one side or the other, this greater knowledge will enable the people to be as potent and effective in settling such problems justly as in those of industry and commerce.

Only in the degree that the members of the coöperative movement (usually no one that is friendly to them are debarred from joining coöperative societies) develop the knowledge, organization and capacity peacefully and by lawful methods, to supplant the private merchant or private owner of

industry to the advantage and betterment of the whole people, will that be done.

The fact that everything which the coöperative movement does is predicated on organization and education and a raising of the standards of the people themselves removes any possible danger of injury, and makes it desirable that that influence be extended as quickly as possible.

As the things which the coöperative movement will do immediately and can accomplish ultimately become better understood, it inspires and encourages every good man and woman to work harder for the just solution of all of our material problems. Because it is clear to them that these problems can be settled justly and permanently by peaceful methods, men and women are influenced to oppose violence as a method of dealing with their grievances.

Women in Productive Industry

By Lillian Erskine

Chief, Bureau of Industrial Statistics, New Jersey Department of Labor, Trenton, N. J.

TO assert that there is no sex in industry is but to restate a truism.

To claim, today, that human engineering has eclipsed mechanical engineering as the potent factor in competitive production is but to echo the propaganda born of the experience of international reconstruction.

But to suggest that the majority of agitation on behalf of an economic "double standard" for men and women in the workroom is as open to question as a moral "double standard" in society is to invite criticism from many sources, including the public as well as the employer, and those upon his pay-roll.

Nevertheless, those of us who are honest in weighing the year-long factors of success in the speeded war industries of a dozen countries know that their production charts definitely wiped out sex distinction not only in the munition plants, but in the standard industries of peace as well.

Nothing can be further from the truth than the assumption that the war was won by a deliberate breaking down of those physical safeguards which forbid the sweating of the operative as well as of the machine. Although, under the stress of unpreparedness, thousands of tragedies were doubtless bred in the workroom, they were as incidental as the toll of admittedly needless suffering in the trenches and on the firing line.

As a matter of fact the industrial lesson of the war has been scientific proof of the balance which has always existed between physical and productive efficiency, and of the inevitable relation existing between excess costs in the overhead, the wastage of bad time-keeping and the unregulated labor turnover.

To inject sex distinctions into contemporary labor problems is to befog issues which concern not individuals but the nation. We are rocked by the wake of the European industrial revolution, and we are learning month by month that the acid test of industrial supremacy is made in the laboratories of peace rather than in those of war. Bound by contracts stripped of all verbiage of patriotism, cramped by the loss of the leeway of excess profits, floundering from cost-plus quicksands back to the bedrock of earnings netted or lost, the post-armistice captains of industry have need for even clearer vision than that which launched our fabricated keels and bridged the Atlantic with munitions.

The flood-tide of rising wages and the steadily ebbing water-line of working hours have left the sands of the labor world strewn with the flotsam and jetsam of past employment traditions, and the wreckage of even our basic manufactories. As a nation consuming more than it is willing to produce, and drifting on the rocks of spending more than it is ready to earn, America is today concerned with no more vital problem than that of the relation of the worker to his work.

The line that depicts per capita production on the factory chart, however, strikes its average in relation to pay-roll and hours irrespective of

questions of sex or of age. The position of women in industry today differs not one jot from that of men, in that in the hands of both rests the solution of the modern economic riddle of how the streams of adequate wages and bettered industrial conditions shall be fed from a dwindling spring of national productive capacity.

DID THE WAR REVOLUTIONIZE INDUSTRIAL CONDITIONS?

While the social changes of the brief war-span must be measured by generations rather than years, we shall do well to discard the fallacy that the world conflict has revolutionized the relation of employer and employee. The search light of emergency may create a new perspective, and transform the doubtful into the obvious; but a reversal of the familiar relations of light and shade in the scene about us can alter nothing, in reality, except the viewpoint of the spectator.

Yet no phrase of the war was more readily accepted by the public than that declaring that our industries were confronted by wholly new conditions. Reduced to its last analysis, the limelight of publicity and the headlines of the press featured the fact that women were earning a living wage on the lathe of the machine-shop, in the laboratory of the chemical plant, and in the cab of the overhead crane. The relation existing between productive efficiency and the standard layout of the machine-shop and the questions of ventilation, lighting and safeguarding were no different than before the war. The fumes of the chemical plant were neither more nor less poisonous than in the days of the "wop" and the "hunkie" from Ellis Island. The hazards of the crane were the same that for years had been written in red in the records of the Workman's Compensation Bureau.

What then was new? The work? The danger? Or was it rather the reaction of popular sentiment in favor of the protection of a new type of employee from the physical or social toll of the employment? Did industry owe a suddenly discovered duty of protection to the woman which it had earlier been free to deny the man? After all, was the woman in industry other than a new test of working standards upon whose economic soundness depended not merely the profit of individual concerns, but the very survival of the nation?

Whether conditions were new or not, the vocabulary of the practical works-manager became suddenly enlarged by additions from that of the social economist and the reformer. The worker became a twenty-four hour problem as soon as the lights of the munition plant blazed in an endless chain from sundown to dawn. Blue books on the health of women war-workers found their place upon the desks of those to whom the span of the employee's day had heretofore been bounded by the blasts of the factory whistle. While the fate of Europe wavered in the balance men, who prided themselves that the keenness of their business judgment was undulled by sentiment, talked of the problems of housing, transportation, fatigue, malnutrition, monotony, training schools, shop hygiene and of the comprehensive activities of the welfare worker.

Yet nothing had been radically changed except the pace of production. Neither the questions of wages and hours nor the sex of the producer were determining factors. In America, as overseas, the woman in overalls had added no new links to the chain that had hitherto been trusted to swing the overhead load of industry. But the hazard of its possible weakness

had suddenly become a matter of international concern; and under the strain of the speeded shift its strength was tested, not by its apparent massiveness, but by its flaws.

ECONOMIC VALUE OF GOOD WORKING CONDITIONS

The fact that only in a negative sense was the war won by the woman in industry in no way detracts from the value of her service or the interest in her achievement. That her welfare became the concern not only of the employer, but also of a public which had long accepted without more than sporadic protest the tragedies of the sacrifice of women's vitality to the monotony of the loom, the incredible labors of the steam laundry, and the ruthlessness of the parasitic trades, is now of passing interest.

It was rather the awakening of industry itself to the costliness of the unregulated labor turnover, and of exacting a physical toll from the worker, whatever the nature of the work or the sex involved, which turned the scales of war, and must be counted upon to ensure the winning of the greater industrial victories of peace.

Although woman's hand was on the lever when the dial of our eastern munition district registered full speed, few will claim for women an inherent industrial ability superior to that of their male competitors. Patience or delicacy of touch aside, those who have studied the astonishing output of the woman-operated war industry which was equipped with standardized workrooms, vestibule training schools, dressing-rooms, wash rooms, lunch rooms, rest rooms, first-aid hospitals and an auxiliary housing and transportation welfare service, are more inclined to attribute the record of the production chart to the soundness of the system than to any difference of sex.

The fact, however, that our social conscience, on behalf of women, convinced our business judgment that industry could be made more productive in proportion to its greater safety and bettered working conditions, is one of the most constructive achievements of the war.

PRODUCTION A VITAL FACTOR IN RECONSTRUCTION

On the test of sustained productivity, therefore, rests not only the retention of women in the peace industries, but also the general adoption of bettered working conditions which the emergency of war forced upon even the reactionary contractor as the price of his success.

It would be folly to suggest that the business value of good working conditions was a discovery of the industrial engineers of the munitions departments of the Allies. For years employers of labor on both sides of the Atlantic had been following progressive policies in their workrooms, although first led thereto rather by the dictates of humanity than by a keen vision of their economic value in relation to production.

However, there is no question as to the revelations of the war-test concerning the interrelated factors which assure a maximum standard of output based upon equipment, or regarding the fallacy of reliance upon the individual effort of the operative as the gauge of the necessary balance between the overhead and the production cost.

While hours were long and wages and materials were low, the almost incredible total of the needless waste of the old industrial system was carried as an inevitable by-product of the factory, and deficits were commonly offset by a further cut in wages or an increase in selling price. But the science of business management, which can balance

the living wage and rational workday against the elimination of every penny-leak along the routing of material from the freight platform to the shipping office, has not only survived the war which it helped to win, but must also be the guide of our employment policies of the future.

What, after all, is the test of production? The overspeeding of a single shift, in order that sufficient interest may be earned to allow industrial equipment to lie idle two-thirds of every working day; the sum of individual endurance, and of the applied skill and craft-training of men or women who are in no sense sharers in the responsibility of the system which assures them their pay envelope only so long as their labor insures to the employer his working margin of profit? Is it the fortunate accident of chance personality of foreman or manager, whose technical ability is combined with an instinct for the selection and handling of the human tool, and so keeps more than the machinery of his department running sweetly? Or is it rather the hourly evidence of a scientific coördination of every mechanical and physical conservation factor known to modern industry, combined with the stimulus of personal incentive, and with the common sense doctrines of practical human engineering?

Since the secret of production lies in the manager's office, rather than in the workroom, it might be argued that the character or sex of the employee is a matter of small concern. But although the day has passed in which the faithfulness of the old-type employee can be counted upon to offset haphazard methods or lack of organizing and administrative ability of the executive staff, successful business competition must always be based upon the spirit of coöperation within the industrial organism.

While the new democracy assures the rights of the individual, the maintenance of such rights is based upon mutual acceptance of social and industrial responsibility. The chaos of wrecked provinces and devastated communities can be a no more logical consequence of unrestrained militarism than the economic ruin foreshadowed by the threat of unrestrained and individualistic industrial warfare.

The working ability of women, therefore, may prove a less determining factor in assuring their retention upon the pay roll than their conservatism, their conscientiousness, their normal dislike of conflict and their adaptability to their working environment.

To proclaim them the equals of men as productive units throughout the range of industry is as inaccurate as it is nonessential in directing the self-sifting process still in course of operation in the employment offices of the country. No one, however, can question the superiority of women in an infinity of processes calling for delicacy of touch, quickness of perception, painstaking accuracy of adjustment, or taxing the subconscious physical reactions associated with the monotony of automatic processes.

Under the stimulus of better wages, improved living conditions, and more liberal diet, the sustained physical endurance of women in the metal trades during the war disproved the prediction that production at the lathe must be achieved at the expense of woman's vitality. But in the rougher basic industries, where muscle is an essential, and the hazard of undue pelvic strain is prevalent, American sentiment and the social duty of safeguarding the function of maternity fortunately forbids a conclusive test of the efficiency of the woman employee.

The industrial engineer who success-

fully swung his shifts of women war workers, however, will be loath to admit the validity of the plea for special working privileges based not on economic argument, but on the sentiment which assumes as a corollary that there is justification for the physical exploitation of the man in a similar occupation. The salvation of industry is now based on the elimination of all physical handicaps to the well-being of every employee, as a prerequisite to a productive efficiency which must not only be sustained but accelerated if we are to avoid the defeat of peace.

It is no longer a question of whether the hand on the belt-shifter be that of a woman or of a man. It is a question of service which shall justify the retention of a wage scale and workday, which has been won by the patience of generations, and by self-sacrifice in the trench as well as at the machine.

As long as the woman in industry demonstrates her ability to balance her earnings by her sustained output, not only is her retention on the payroll assured, but she will find also a steadily broadening range of opportunity.

Federal Government and Production

By Grant Hamilton

Formerly Director Working Conditions Service, United States Department of Labor; now Special Immigrant Inspector

WHAT can the government do for production? According to past political thought the best thing the government could do was to keep its hands off except when the exercise of police power was necessary to maintain property rights. However, there has been developing a larger concept of governmental functions—constructive as well as punitive duties.

Dissatisfaction with inefficiency that has developed under private control has led some enthusiasts to suggest and urge as a solution of production problems that all or some of the large industries be nationalized. That solution would involve production in all the evils of the bureaucratic system, would deaden individual initiative and would halt production progress by the perversions of majority decisions, quantity values and the negligible consideration which politics gives to facts and scientific law.

All progress is individual and begins with basic things first. Therefore, this discussion can wisely ignore the socialistic theory of governmental functions and consider only what the government can contribute to production under private initiative.

In the constructive field, governmental work is most effective when it has the least mandatory power. When government service to be effective must win for itself confidence and leadership, it is forced to ground its activity upon facts and laws—the test of permanent production efficiency.

Need for Industrial Research

Industry needs facts. The main difficulty with production in the past is that it has not trusted its success to exact information, knowledge and application of the best methods, but to manipulation and securing profits by some trick of exploitation. That phase of business is passing; business men are beginning to understand that exploitation does not pay in the long run. Waste, whether of human or material elements, means financial losses. Receipts really represent the social service the industry is able to perform. Whatever curtails social service will eventually curtail profits. It pays in dollars and cents as well as morality to run business in accord with the concept of social service. This concept presupposes that all elements and functions concerned in production are to be administered with highest effectiveness, in accordance with the best understanding and information. It is apparent how large a place information has in production. Of the gathering of information there seems no end. But the value of the information is conditioned by the method of inquiry, the purpose, the personal equations of the investigators.

Industrial information becomes available through research. No research can maintain itself entirely independent of influences from its sources of revenue. When the purpose of the research is served by scientific impartiality—as in the case of industrial formulas—private revenues are not detrimental. However,

when the research deals with matters that concern human interests there is but one agency that stands for the welfare of citizenship as a whole, and that agency should be preëminent in that field.

The human element in production was pretty generally ignored by technicians, managers and employers until attention was focussed by the militant tactics of trade unions. Countermilitancy, on the part of employers, resulted only in strife and waste. Finally, some of the wiser managers discovered that labor organizations facilitated administrative purposes, if the management could develop good will and coöperation of workmen, instead of hostility and distrust. This concept led to the questions:

"What administrative policies will remove the causes of militancy? What methods will develop good will, and how can we help to release the full producing power of workers?"

This field of personnel relations involves the heart of the labor problem and the future of production progress. Information as to theories, methods, and experiments is of fundamental importance to industry and to the state. There are many individuals, voluntary organizations and foundations doing valuable work in this field—work which would be of incalculable value to individual managers if made available for their use.

In order to make present knowledge available for use and for continued investigation there ought to be a national clearing house of information. We can safely entrust such a function only to an agency as fully representative of all national interests as possible, and equally free from non-social interests. A governmental agency has the advantage of freedom from private contributions, which more or less dictates personnel or conclusions. Endow such an agency with advisory and informational powers only and it will be forced by the law of self-preservation to avoid the more entangling and malevolent tendencies of the ordinary governmental bureau. A governmental service is forced by its nature to adopt policies of business efficiency. In addition, there is an authority sustaining a governmental research or recommendation that cannot be attained by voluntary organizations or unofficial presentation.

While it is maintained that a government agency should be established for leadership in the field of personnel relations, this conclusion does not even suggest the abolition of voluntary organizations or individual research. On the contrary, the governmental agency should serve as the coördinating body to facilitate and unify various efforts and to promulgate findings. Such advisory and coöperative relations could be established with private research agencies, that by mutual agreement and conformity to standards of methods and tests, private research and professional work could acquire the authority of governmental endorsement.

GOVERNMENT FUNCTIONS IN PRODUCTION

Having thus considered the advisability of the government's participation in the constructive field of production, the next step necessary is to briefly consider what functions it should perform:

First—It should establish a national clearing house for information upon personnel relations.

Second—It should place this information in the hands of responsible heads of industry in a form usable in their practical problems.

Third—It should maintain a staff of experts and specialists available to

any industry for consultation purposes. (This function would not interfere with those who are entering the developing profession of personnel administration, but, on the contrary, would open new opportunities for their service.)

EFFECT OF GOVERNMENT PARTICIPATION IN PRODUCTION

The result of this governmental service would help to remove causes of industrial strife, develop the opportunity and the method for coöperation between management and workers for improved production, and establish in industrial government those principles which provide for the fullest development and opportunity for self-expression of all concerned.

While it is outside the purpose of this article to deal with specific theories, yet it is felt that the service will be an ultimate failure that does not regard the spiritual element in man as the dominant force in all relations of life.

In addition to the advisory and informational service which the government ought to render industry, it should render service in two other fundamentally important capacities—in mobilizing the working force of the country so that workers can have information of work opportunities and can find work for which they are fitted, and in helping to adjust industrial disputes.

The function named first implies constructive service of a similar nature to that concerned with personnel administration. The employment problem involves nation-wide elements and can be comprehensively dealt with only by a national agency. Maintenance of an adequate, as well as an efficient and stable working group is necessary to most effective production.

In the third place the government should assist in adjusting industrial breakdowns in order to further the best interests of those concerned in the industry, as well as the consuming public. Here again the government can be most helpful in an advisory capacity. Leadership, rather than mandatory power, brings the best long-time results. This in such industrial emergencies leads naturally to the larger constructive service which the government can render in helping industries to avoid industrial catastrophies by removing the causes of friction, and providing adequate opportunities for constructive use of energy.

Industrial Hygiene as a Factor in Production

By Bernard J. Newman
Late Sanitary Expert in Ordnance, War Department

IT was not always a pleasant duty during the war period to show credentials to a plant manager and to announce the unpopular task of plant inspection. Government inspectors were constantly coming and going until the managers often begged for a respite that they might have time to attend to their work. Occasionally, however, managers welcomed inspectors. At times when the inspectors were specialists in their field, they were eagerly sought. It fell to the lot of the office to which the writer was attached to receive requests to assist plants where either the raw materials, intermediates or finished products constituted a health hazard. The management at such times was puzzled as to how to check high sick rate, absenteeism and decreased production in certain departments. Often, despite strenuous efforts to recruit employees, despite a constant force of new employees being hired and in the face of a persistent demand to increase output, the working force decreased. Impressions received while on such duties have fully confirmed the writer's opinions concerning the close relationship which, under other circumstances, he has observed between safe working conditions and a normal output. It is, among those who have followed scientific production, a demonstrated fact that working conditions have a determinable relationship to output. When these working conditions are insanitary, output diminishes; when they conform to hygienic laws, output approximates its maximum, other things being normal.

Working Conditions Retarding Production

Several records from a mass of data taken from experiences in ordnance and allied plants during the hectic days of the war, when more production and still more production was being demanded, and when all things that stood in the way were relegated to the scrap heap, illustrate this fact. In some instances, plants were so impressed with the results that they continued, as a business proposition, to perfect their working conditions after the armistice.

The abnormal working conditions which retarded production were varied. A few case histories will illustrate these conditions:

Case I

This firm manufactured an abrasive material. The operations of crushers, lathes, conveyors, elevators, and hoppers gave forth large quantities of very fine dust. The work rooms in which these operations took place were always in a dense cloud. Air samples taken with the Palmer Dust Machine showed approximately 213,000,000 dust particles of one-fourth standard units per cubic foot of air. One test, at a particularly bad machine, showed 1,050,000,000 dust particles of the above size having a weight of 23.6 mgs. in each cubic foot of air. The escape of this dust, which was valuable, was a decidedly costly waste chargeable against production. Labor was found to be more than usually unstable. Although some of these processes called for semi-skilled labor, such labor was difficult to obtain and stayed only a short time after employment. There was a history of "coughs, lung-troubles, nose and throat troubles." This physical effect was natural and would be expected when the air dustiness in the work rooms taxed the dust filters of the nose and throat with the removal from a day's air supply of approximately 28,755,000,000 dust particles of one-fourth standard unit size alone, not counting the larger particles;

the one-fourth standard unit size being ten microns and under, or the size found by the South African Commission to be most injurious to the mucous surfaces and to the lungs. Plant records showed, moreover, a high absentee record, while "unemployment within employment" was a source of much lost time. These conditions were not new but were of long standing and had forced attention when the strain of production showed the inability of the workers to stand up under them. By means of specially designed hoods, modifications in the operations of the exhausts, and changes in the fume line, the air dustiness was practically eliminated, thereby conserving abrasive material and improving working conditions.

In many plants similar conditions were met. The improvements installed were financially profitable. One plant conserved daily $100 worth of valuable dust. Another met the cost of installing its improvements out of dust saved within a three month period, in addition to the benefits of removing hazardous dusts from the work places of the employees.

Case II

A new powder plant, handling T. N. T. and Tetryl, employed a large force of women and girls. It was found at first that the women could turn out as much work as men. After a few months the absentee records showed much instability among the women, absenteeism increased, and the plant medical and surgical relief office reported a high sickness rate. Then turnover began to increase. It became noised abroad that the plant was not a healthy place in which to work and the difficulty of getting employees increased. The output of this plant was very essential in keeping up the supply of munitions. The management was puzzled. It had a good medical department and an excellent staff of physicians and nurses and many welfare plans had been instituted for the employees. Cursory investigation showed the girls had discontinued work because of swollen faces, often so badly swollen as to close the eyes. In a trip through the operating departments, employees were found with areas of the face, hands and arms in a highly inflamed condition. It became apparent that certain processes, although seemingly safeguarded, yet emitted quantities of minute particles of T. N. T. and Tetryl. The workers, partly through their own carelessness and partly through inadequate protection, were exposed to and suffering from a powder dermatosis. Indiscrete advice passing from worker to worker, and a failure on the part of the forewoman to carry out the instructions of the medical and surgical relief office, had so magnified the problem as to increase the sick rate, absenteeism, and turnover noted. Such conditions readily yielded to correction and control.

Occupational dermatoses caused by dusts, liquids and fumes are common and almost invariably slow up production. They either give the plant an unsavory reputation and thus increase the difficulty of securing high grade workers or cause painful lesions, as in furunculosis, which retard the output of the worker or cause a sickness absenteeism puzzling and costly to the management.

Case III

This was another powder plant. A new explosive was manufactured. The buildings were well placed and effectively equipped to protect health and life. They were planned and constructed under government supervision and cost. On the same acreage, however, was another plant owned and operated by the firm which made the new explosive. This plant complained of the grade of employees available and of their instability. The medical office recorded a high percentage of poison cases. Cyanotic workers were found in the aniline production house. Men would stay there only a short time. Working conditions were bad. Pools of aniline oil were on the floors, fumes from the tanks came forth whenever the tanks were charged. Exhaust hoods were misplaced, while the air supply ducts were ineffective because of an ineffective fan. Here was an aniline hazard, the seriousness of which was known but precautions against which, despite the numerous cases of poisoning, were not provided.

A typhoid hazard was also present in this plant. The construction camp adjoining used the open privy vault. The commissary with its large kitchen and eating room swarmed with flies from the open vaults. Other hazards were also present. With them went a record of difficulty to get employees greater than that of neighboring plants because of the reputation that had gone forth, sickness in excess, absenteeism turnover, all creating added costs in production and delaying output correspondingly.

The foregoing are typical cases, pertinent here because they illustrate working conditions common to indus-

trial establishments.[1] They indicate cost items, unfortunately not often included among the unnecessary plant wastes on the production cost sheets and hence ordinarily receive scant attention except when legislation is against them.

SANITARY WORKING CONDITIONS VITAL TO PRODUCTION

Manifestly the health, comfort and contentment of the worker are vital factors in production. These contribute to the physical capacity as well as to the mental willingness to produce, that is, muscle power and will power, without which production lags. As there is an intimate relationship between health and hygiene, there is also an intimate relationship between hygiene and production. In so far as production is concerned, what it asks of the worker is that he shall use his brain and muscle in conjunction with the mechanical devices placed at his disposal to render an output equivalent to the wages paid, which wages are based upon cost factors in relation to sales prices so determined as to enable the management to present dividends to the stockholders. In order to meet his share in production, therefore, the worker must be physically fit and, if individual initiativeness is a factor in his labor, he must be mentally alert. In order to be physically fit and mentally alert, he must have had not only training and experience in the particular kind of work assigned to him, but he must also be able so to coördinate his muscle action as to get the full value of each group of muscles for the labor which he has to perform. It becomes essential, therefore, in the interest of full production, that the worker shall be physically and mentally fit for his work. Whatever interferes with such fitness causes a loss in output.

If physical strength is analyzed on the basis of the physiological relationship of the various parts of the body, it will be noted that the available energy of any group of muscles depends upon the healthy functioning of the body; hence, whatever interferes with such normal functioning, such as dust, fumes, gases, excessive heat or cold, plant insanitation, any or all, are a handicap to productive ability. There is a difference in the extent of the handicap, perhaps, dependent upon the power of the body to cope with such causative agency or agencies and the nature of the influencing factor itself. This variant is commonly referred to as body resistance or individual susceptibility; but barring immunity, natural or acquired, the body reacts unfavorably to such causative agencies impairing the health, and productive ability is, therefore, correspondingly reduced.

There is another group of adverse industrial conditions which affect muscular activity. The science of physiology has demonstrated that strain unduly prolonged as well as adverse working conditions permit the accumulation of waste products in the muscles. These products later may be distributed throughout the system. Not only may these accumulated wastes, some of which act as toxins, injure the particular muscles where they originate, but, when distributed by means of the blood stream, may also affect the more vital organs, with the ultimate result that no matter what the incentive may be, the worker is unable to produce a normal output. For example, recent studies in fatigue[2] have shown that in

[1] See *Diseases of Occupational and Vocational Hygiene*, by George M. Kober and William C. Hanson; *Occupational Diseases*, by W. Gilman Thompson, M.D.; *Diseases of Occupation*, by Thomas Oliver; Bulletin 100 of the Bureau of Labor Statistics.

[2] Bulletin No. 106, *Studies in Industrial Physiology:* "Fatigue in Relation to Working Capacity." United States Public Health Service.

certain prolonged occupations production invariably decreases. English studies[3] show that under heavy lifting for prolonged periods, as well as under prolonged strain from long hours of work, muscular efficiency declines to a point where the labor of the workers so affected is a loss to the plant. Exactly the same results follow where workers are obliged to work in strained postures and at occupations where they are required to stand without intermission for long periods, or where they are exposed to inadequate ventilation and inadequate lighting, either too low or too great an intensity or too much glare. Indicative also of the effect of such conditions is the increased accident rate, both in frequency and in severity. Aside from the physical reaction on the nervous system and its effect on the mental attitude of the worker, there is a psychological effect which follows the laws of suggestion and imitation.

As the orderliness of an environment suggests orderliness in personal conduct, and as uncleanliness in surroundings likewise begets uncleanliness in conduct, so air dustiness and uncleanliness suggest slovenliness in the attitude and workmanship of the worker. Moreover, as there is a physical reaction restricting normal breathing in the presence of unpleasant odors, so also there is a tendency to withdraw from unpleasant sights, sounds and conditions causing discomfort. Wherever, therefore, working conditions present unpleasant odors, or distracting sounds, and require contacts with materials that cause personal discomfort, such as extremes in heat and cold, wet processes, foul or filthy liquids, there is a corresponding retardation of activity on the part of the worker. No normal worker ever gets adjusted to unpleasant working conditions to the extent that he is able to produce in their presence as much as he is able to produce when they are absent.

There is a further reaction here. The workers on the job not only slow up in their output, but many refuse also to continue in such employment, making up a large percentage of the turnover in industry. Often there is a tendency to accept such workers as nomads when the fault is not with the worker but with the job which has been assigned to him; that is, he is asked to do tasks not inherently unattractive, but permitted to become so because of the failure of the plant management to recognize the part which psychology plays in stabilizing employment. It is true that industrial establishments, recognizing the undesirability of certain processes or occupations, often furnish inducements in the way of shorter hours or higher pay in order to retain employees at such tasks. Nevertheless, the fact remains that a large percentage of "quits" are due to a dissatisfaction with the conditions under which certain jobs have to be carried on, notwithstanding that the reason assigned by the employment office or foreman may read otherwise. This is a result which corresponds to those other results previously mentioned, where, upon the discovery of the hazardous character of the work engaged in, workers have given up their employment without delay. Furthermore, it should be remembered that occupational health hazards give agitators in industrial establishments arguments to stir up industrial unrest. It is natural that workers should resent unnecessary exposure to hazards injurious to their life or health. Ordinarily, disloyalty to the management is not easily created; only when it can be stimulated by arguments which point out the injustice of the risks to which

[3] *Industrial Efficiency and Fatigue in Munitions Plants*, No. 230, Bureau of Labor Statistics.

the worker is unnecessarily exposed can it be raised to the point where soldiering, sabotage, unreasonable strikes and their like result. Needless to say that where such practices are indulged in materials are wasted, time is thrown away and output suffers. Interruptions to continuous employment, fostered by agitation, are likely to occur where adverse working conditions furnish the talking points.

THE PRICE OF OCCUPATIONAL HEALTH HAZARDS

It is difficult to mass exact figures which show the losses from the foregoing causes. In several articles recently published, the writer has attempted to show that from sickness alone production within the United States is decreased yearly by the withdrawal from active service of practically one million full-time employees out of the forty million employees annually at work. In absenteeism various plants have shown records of days lost per year per thousand employees, varying from seven thousand six hundred and eighty days in plants where absenteeism was fairly low to thirty-one thousand eight hundred and sixty days in plants where the rates were high. This means an annual loss in some instances from full time production of approximately one hundred and six men per every thousand employed. In a similar way turnover has been shown to vary in plants from 40 per cent to 400 per cent annually, while in some departments it has risen to 1,100 per cent. The mere cost of such turnover running from fifteen dollars to three hundred dollars per worker, depending upon the degree of skill required in the process, makes, in a large plant where the rate is high, a measurable deficit from wages and dividends. It will be noted that the emphasis in the foregoing discussion has been placed upon the losses to production through the change or transfer of employees from job to job. Only a mortality table or a life expectancy table for each trade could picture, with any degree of accuracy, the effect upon life itself of occupational health hazards.

It will thus be seen that the price which production pays for occupational health hazards is an undue amount of sickness, abnormal absenteeism, increased turnover, delays in carrying forward work because of such losses, a feeling of uneasiness among employees accompanied by antagonisms and sabotage, and difficulty in getting employees to fill vacancies due to the bad reputation given to the plant by those who quit. More and more plant credit among the big banking houses is being made to depend on the working conditions within the plant and the harmonious relationship between the plant employee and the management. Borrowing capacity is reduced when working conditions are abnormal and industrial unrest is instigated thereby.

The situation in industrial plants today, in so far as safe working conditions are concerned, is not a hopeless one. Indeed the prospects are exceptionally good. The plant manager who seeks to maintain his plant at the highest efficiency has many aids now available which were not very well known a decade ago. The characteristic feature of these aids is that they emphasize the human factor in production. Here science thinks in terms of the human machine. Inventive genius in perfecting mechanical means of production finds limitations in the mental and physical capacity and disposition of the worker to utilize machinery continually and intelligently. These limitations have forced the development of a comprehensive program, scientifically sound, along the lines of labor adminis-

tration including employment management and coöperative production, accident prevention and industrial hygiene. Each is a complement to and supplement of the others. In the field of industrial hygiene there are perhaps a greater number of factors involved, having a scientific basis, than in the other fields, and the investments made therein yield the most permanent results. It is not an easy task, however, to apply the principles of industrial hygiene to the average industrial establishment. Technical and professional training in the management along industrial hygiene lines are essential; without them, time and money are bound to be wasted. Hence, whenever a program of industrial hygiene is to be inaugurated a specialist should be attached to the management force, to plan and direct it, if the plant is large enough to use his full-time service, or if the plant is small, a consulting service should be utilized. Irrespective, however, of the mode of supervision adopted, there are certain points which must be borne in mind in order to secure efficient planning and administration. These may be summed up as follows:

SANITARY EQUIPMENT OF INDUSTRIAL PLANTS

Each plant in industries of dissimilar character has an individual problem. Even where plants are similar, there is sufficient variation to make a "ready-made" plan unwise. The "ready-made" program may be mischievous. Much depends upon the type of building occupied, its location, area and the accessibility of public service facilities. It is highly desirable, prior to the construction of the plant and even prior to the occupancy of the building already constructed, to analyze the sanitary equipment with reference to compliance with hygienic laws. Such factors as light and ventilation, natural and artificial, fundamentally important as they are now known to be in the maintenance of safe working conditions, need to be considered in relation to the grade of work which it is proposed to carry on. In like manner, other phases of sanitation, such as water supply, washing facilities, lockers, toilets and, under certain conditions, shower-baths, should be predetermined and placement of workers should be made on the basis of their adequacy and convenience. If buildings are already erected and occupied these factors still call for consideration and standardization. They comprise what is generally understood as the sanitary equipment of industrial plants.

However, a knowledge of plant working conditions and of their effects can be fully determined only by an analysis of the deviations made from other hygienic requirements. Such deviations can best be determined by both a process analysis and a job analysis. In such process analysis the various steps in manufacturing from raw material to the finished product need to be outlined, including the nature of the substance, the conditions under which they are used, the intermediates that are formed and the wastes that are eliminated. Such a process analysis reveals the known occupational poison hazards, and suggests ways whereby they may be removed.

The chief duty, however, of the industrial hygienist is not simply to eliminate hazards. The positive aspects of plant hygiene come more particularly through the job analysis which aids in the placement of employees in occupations and at tasks for which they are fitted by training, experience and by physical ability. Such job analysis determines the working requirements for each job and simplifies the place-

ment of workers so as to facilitate production with the least possible strain and injury to the workers thus scientifically placed.

Fitting the worker to the job requires a knowledge of what are the best age groups, heights and weights for such job, as well as what is needed of the worker by way of accuracy of vision and of hearing, keenness of mentality, temperamentality, ability to stand fatigue or to meet muscular strain. Job analysis determines the excess motions that may be eliminated as well as the rest periods essential in order that fatiguing stretches of work may be broken and the waste products created in the muscles of the worker be carried off.

It is apparent that this phase of the industrial hygiene program requires close coöperation with the medical and surgical relief department in the physical examination of workers as a basis of selection and transfer for particular jobs.

The foregoing program meets most of the problems having an effect upon the productive capacity of the worker that arise from within the plant. However, industry is constantly bringing forth new materials that are relatively harmless taken separately, but that are injurious to health in their combinations. In order that the effect of such new hazards may be discovered, it is advisable that careful plant records be kept which will tell the amount of sickness, accidents, absenteeism, turnover, output, attendance on relief rooms, nature of illness and similar information upon the basis of which a current index of plant conditions may be made. These records analyzed by occupations, processes and departments and eliminating the possible causative factors not arising from plant insanitation, will give the probable responsibility of such insanitation for such extraordinary costs in production.

By the foregoing methods, modified as conditions may require, industrial plants may increase their productive capacity without jeopardizing the health of the worker or interfering with his personal rights and in a way financially profitable to both.

Some Expectations of the Workers

By James M. Lynch
Member New York State Industrial Commission

THE first requisite for a normal output of any factory, mine or mill is fair treatment of the wage earners as to hours, wages and conditions of employment. In these matters the worker is entitled to exercise his right of self-determination. He must be made to understand at all times that the conditions under which he is employed are equal to if not better than the conditions obtaining in other establishments producing manufactured articles of a similar character. I know that countless suggestions have been made as a spur to increase the output, but any purely mechanical means to this end are bound to fail. Underneath the effort must be the basis of human sympathy and human understanding, furnished as a matter of right dealing, as an exemplification of the Golden Rule, expressed in such a way as to help rather than to humiliate. Given fair conditions of employment, the worker will, as a rule, respond with his best effort in the way of production. Made to understand that the employer has a real interest in his welfare, he will reciprocate by a real interest in the advancement of the employer's business. Of course, there are exceptions to this rule as there are exceptions to every rule and, as usual with exceptions, the most will be made out of them by the employer or his representative who is a disciple of what is called the good old-fashioned method of urging the wage earner by personal castigation or threats of discharge to the highest ratio of forced production possible to maintain.

Illustrations of the effort to supply the thing that is needful and stimulating to employes are manifold, so I have set down here a few that are striking and illuminative. Taken as a whole they may suggest measures of value in particular plants. At least they go to show that creative energy and enterprise recognize that the new era that has come upon us requires new forms of treatment, and as the race is not always to the swift so in industry success is not usually the reward of the prosaic.

The United States Commissioner of Labor Statistics says: "Strikes are insignificant in causing stoppage of work in comparison with unemployment due to dearth of raw material, lack of orders for output, insufficient transportation, lack of a properly balanced organization of industry, lack of an intelligent employment policy for hiring and handling men, failure to make use of the tremendous latent creative force lying dormant in the workers."

A questionnaire sent to seventy employers by the industrial bureau of the Merchants' Association of New York City showed that fourteen firms insure their employes; one firm has an old age pension; two firms give death benefits (one a month's wages; the other six months to a year—up to $200 —depending on length of service); six provide medical attendance; 18 provide rest rooms; 14 state that they pay for overtime; 17 provide lunch rooms, five of which are free. Five of the large firms provide means of recreation, such as bowling and tennis clubs, dressmaking and millinery classes, social

and club rooms, and summer camps. Two of the large firms have classes in stenography, correspondence and Spanish.

PSYCHOLOGICAL TESTS FOR LABOR TROUBLES

According to a recent report, psychological tests are to be advanced as a remedy for some labor troubles, although a word of warning is said:

Psychological tests should not be considered a panacea for all labor troubles. Neither should they be relied on as the sole criteria for selecting applicants for jobs. They are merely to supplement and not to supplant the usual employment procedure. For we agree that employment, after all, except in the more routinized jobs, is a matter of compromise and adjustment. Naturally, tests will never conform to all the exigencies arising in an organization.

It is true that there are a great many pseudo-psychologists, vocational specialists, propagandists and popular publications advocating the wholesale use of psychological tests. There is even a group of psychologists who are advertising tests for sale at so much per hundred. This is something which should be avoided as much as possible.

According to the psychological technique as it is commonly understood, as well as according to the dictates of common sense, no tests can be safely applied without a preliminary trial or series of trials to discover whether the tests proposed actually apply to the particular jobs for which they are intended. Even though the tests have been tried out and used elsewhere, it does not follow that they will do equally well in a new situation or under new conditions.

PENSION SYSTEMS IN INDUSTRY

Private industrial pensions, providing for superannuated employes, and, in some cases, disability, are considered in a report of the Industrial Bureau of the Merchants' Association of New York. The report is based on a survey of 142 systems.

These six essential principles are laid down in the report:

No pension system should be started without competent actuarial guidance.

The problem of "accrued liabilities" should be given careful and special consideration.

The legal obligation laid upon the corporation should be carefully considered.

The money of the pension fund should be kept entirely separate from all other sources of the corporation.

The solvency of the pension fund is not only dependent upon its original foundation, but also upon the administration after it is set up.

A pension system should be framed in coöperation with representatives from the employes rather than solely by the employing corporation itself.

The report reads:

The fundamental reason underlying almost every pension system is the desire of the employer to assure his employes of independence during their old age, both as a reward for faithfulness and as the best method of performing their duty. A prevalent social theory which the average employer accepts is that an employer should not use the services of an employe during the fruitful period of his life and then heartlessly discard him to the human scrap heap, where he is dependent upon society if he has not been able to accumulate savings from his earnings to care for himself and his dependents during his old age. On the other hand, it is expensive and unsatisfactory to keep an employe who has become inefficient because of old age at his regular position, and it is frequently difficult to find sufficient positions suitable to the capability of or satisfactory to all superannuated employes. The only alternative is to pension them in some way.

Asserting that employes are not as a rule enthusiastic about or appreciative of any benefit which they receive solely as a gift from the employer, given on his own initiative and without consulting their wishes, the report continues:

The intelligent interest of employes can be obtained in two ways: In the first place, by obtaining their whole hearted indorsement before installing a pension system and by coöperating with them in framing the provisions and operating the system after installation; and, in the second place, by making it in fact a system of the employes through financial contributions by

them. The lack of success of pension systems is due in no small degree to the fact that they are usually autocratic and paternalistic, rather than democratic or coöperative.

Few employers of labor appear to realize that there is no greater enemy of efficiency in industry than mere noise. The noise of machinery is accepted as being almost commonplace. The din and bustle of a warehouse is regarded as part of the daily routine. That this clatter, this din, are eating away profits is not recognized, for the reason that the effect of noise upon the human machine has not been taken into consideration.* It is in this field, declares the medical correspondent of the *New York Times Supplement*, that further research work is urgently required, for at the present moment waste, and especially waste of human material, is not only an extravagance, but indefensible as well.

"The matter of noise," continues the writer, "cannot yet be set down in tabular form as a profit and loss account. Too long hours, bad lighting, bad feeding, bad ventilation have all been reduced to simple matters of pounds, shillings and pence. The noisy factory has not come within the scope of such a research. It represents one of the thousands of problems which every enlightened employer will soon be considering, and upon which he will demand positive information in the name of business efficiency."

The director of the Department of Research of the National Association of Credit Men says: "High labor turnover has meant dislocation not only as from place to place but as from industry to industry as well. Here again it is obvious that a great deal of efficiency is lost. With the best skill and the best intentions in the world a workman in a new occupation means a waste of time in adaptation to the full speed of productivity."

WHAT IS A LIVING WAGE?

The *New York Commercial* says that labor should have a living wage, with a liberal interpretation upon the word "living." A living wage does not mean just enough to afford shelter and provide clothing for the laborer and his family. It means that they should be well and comfortably housed and well and comfortably clothed; that there should be a sufficient margin to afford wholesome pleasures and ample education for the children; that the laborer is not to be kept down to a basis where he merely lives to work, but rather that he should work to live. He should have margin enough to lay aside something for old age and for the

* We concur heartily with Mr. Frayne in this reference to the noise factor in modern industry. We believe that every manufacturer can well afford to conduct a painstaking survey of his establishment with the single purpose of seeing what can be done to reduce noise. Such survey should cover office as well as shop. Unnecessary noise represents a peculiarly wanton waste in that it must necessarily exert a demoralizing effect on the workers.

In this connection the officers of the Academy announce their purpose to issue, in the fall of 1921, a volume devoted to the development of the aesthetic side of industry. Modern industry has too frequently acted on the assumption that mass production and even economical production must be hideous. We believe that as we learn the deeper lessons as to what genuinely makes for production that the claims of beauty for a place in the production process will be more and more recognized. Already we see the first beginnings of this movement to place the worker by hand and brain in an environment where line, form and color lend some measure of harmony to the daily routine.

The Academy is anxious to have brought to its attention any instances of this kind. It is thought that by bringing together in one volume illustrations covering a wide variety of effort toward the development of beauty in industry that a very telling demonstration can be made.

All communications on this subject should be addressed to Morris L. Cooke, 1109 Finance Building, Philadelphia, who will edit this proposed volume.

THE EDITOR OF THE ANNALS.

vicissitudes of life that come to everyone. All these elements must be included in the interpretation of the word "living." It makes contented citizens and better citizens, and such a citizenship makes a strong country.

A LABOR POLICY NEEDED TO DECREASE TURNOVER

The Federal Board for Vocational Education (Bulletin No. 46) says that the reduction of labor turnover begins with the hiring policy, according to a summary of the results of many investigations regarding the stability of the working force in industrial establishments. An almost invariable accompaniment of low labor turnover is a comprehensively formulated and carefully executed liberal labor and employment policy. The chief essentials of such a policy are: (1) Good pay and steady work; (2) the careful selection and placement of help; (3) a well organized employment department; (4) the installation of some system for the hearing and adjustment of complaints.

Studies made in Cleveland, Detroit, Cincinnati and Milwaukee indicated great instability in the labor market. In Cleveland one-third and in Detroit two-fifths of the establishments under view had an annual labor turnover of more than 300 per cent, while three-fifths of those in Cleveland and four-fifths of those in Detroit went above 200 per cent. More than one-half the establishments in Milwaukee reported a turnover of 180 per cent or more yearly. The lowest figure reported for these four cities was 46 in a Detroit plant where only 1 per cent of the changes was due to discharge. A Cincinnati firm reported a 57 per cent and a Cleveland establishment a 65 per cent turnover.

Detailed attention was given to the policies of firms in whose establishments the shifting of workers fell considerably below the average. One firm accounted for the relative stability of its working force largely by its employment policy which requires foremen to interview applicants, although final decisions both in hiring and discharging rest with the department superintendents. This policy greatly increases the chances of securing satisfactory employes and often results in the transfer of men who would otherwise be discharged. Prompt investigation of absenteeism, which is frequently a premonitory symptom of the intention to shift, a high standard for service activities, relatively high wages, increasing with rises in cost of living, the absence of individual efficiency records, which are interpreted as an attempt to "drive" the men, and the existence of an employes' committee to deal with grievances, are believed to be other causes of the satisfactory turnover record in this establishment.

A larger output, which is one of our chief industrial problems, can be secured by increasing efficiency and stability among the workers, says the United States Bureau of Mines. After an intensive investigation of mining camps, it presents the principal conditions necessary to maintain a permanent and productive working force.

A system of physical examinations before employment offers mutual protection to employer and employe, for, when properly administered, it enables the company to avoid unjustified claims for damages, insures the suitable placement of employes and promotes the correction of physical defects. Very few men are actually excluded from work by such examinations. The records of a large corporation employing thousands of men show that only 7 per cent were rejected on first examination. Since, however,

simple operations or other corrective measures rendered 75 per cent of these rejected applicants fit for employment, the total net rejections were only 2 per cent.

An article advocating well-organized medical work in industrial establishments, prepared by C. K. and K. R. Drinker, in the June issue of *Industrial Hygiene*, states that there are 900 plants in the United States which employ a total of 1,500 part-time and full-time physicians. "This number increases constantly. There is no evidence that the employer, once a medical department is established, ever gives it up."

Is Profit Sharing a Panacea for Industrial Troubles?

In a report on "Practical Experience with Profit Sharing in Industrial Plants," the National Industrial Conference Board says that while profit sharing is "no panacea" for industrial troubles it has shown considerable usefulness in particular cases.

Encouragement for continuing experiments with profit sharing and its allied forms is offered by this report in that numerous plans are noted which are achieving decided success. On the other hand, profit sharing is no panacea. It is no solution of the wage problem. But properly understood and utilized it possesses valuable features, and the present revival of interest among industrialists should lead to a basis for further profitable experimentation.

Distinguishing between "true profit sharing" and the various bonus and stock dividend plans, the report says that "the distinguishing feature of true profit sharing is that the amount of profits to be allocated to the workers varies directly, and rises or falls proportionately, with an increase or decrease in the profits realized." Its outstanding characteristics are:

First, the employer engages to distribute to his workers a share of the net profits; second, the actual percentage of this participation is fixed in advance.

Limited profit sharing conforms in this definition except in the matter of its restricted application.

Wage bonuses are distributions which are decided upon arbitrarily, and bear no predetermined relation to profits; sometimes they are allotted even though no profits have accrued.

Savings sharing plans distribute to the workers a portion of the savings effected in cost of production by increased efficiency and coöperation on their part.

Stock subscription plans emphasize the importance of thrift and are essentially a matter of the employe investing his money in shares of the company's stock, although inducements are usually offered in the form of premiums and easy terms of payment.

Experience with true profit sharing plans points toward two main conclusions:

(1) Judged purely on the basis of their longevity, profit sharing plans are a doubtful expedient since but few of the many plans put in operation have survived a long period of trial.

(2) A critical examination of individual experiences, however, indicates an encouraging degree of temporary success.

The reason for abandonment of true profit sharing plans is found both in circumstances having nothing to do with profit sharing, such as a change in management or ownership, and in those connected with an unsatisfactory working of the plan itself. Of the latter, apathy, dissatisfaction and open hostility on the part of the workers loom large and were found in more than 50 per cent of the cases noted.

Labor unions seem to be uniformly opposed to profit sharing, and difficulties are encountered particularly with unskilled and unintelligent workers. This experience would indicate that efforts at establishing permanently satisfactory relations between worker and employer might better be turned in other directions than that of profit sharing.

A study of the history of abandoned plans, moreover, strongly suggests the thought that plans now in operation, which have inspired enthusiastic testimonials of success, are only at one of the stages of the usual course of a profit sharing plan, that their real test has not come, and that eventually they may fall into disuse.

Sickness a Factor in Decreased Production

There have come under my observation a number of establishments in which just the kind of sympathetic interest is manifested by the employer

that is suggested in the foregoing paragraphs, and among the methods used is included attention to the problem of sickness. The cost of labor turnover has been analyzed and explained so often that it need not be further dilated on here except to say that it represents a very substantial part of the overhead in the conduct of any enterprise. Methods that will reduce the labor turnover to a minimum are as valuable in the way of securing increased production as are the most modern labor saving devices. Sickness is one of the prime causes of absence from employment, and absence from employment on the part of the worker means a reduction in product. It is, therefore, of the effects of sickness on the wage earners and the profitable thing for the employer to do in the way of alleviation and correction that I propose to speak in this article.

All wage earners and their families understand the grim truth of the saying: "When the breadwinner falls ill, the wolf is at the door."

Charity organization societies, too, know at first hand how great are the individual and social ravages of sickness. Everywhere, at all times, sickness is the greatest single cause of dependency.

So at the outset let us fix our minds upon two facts that go to the very heart of the present discussion:

(1) Sickness is to blame for fully one-half of the calls upon charity.

(2) Nearly one-half of the vast sums now being spent by public and private charities because of illness among wage-earners will be made unnecessary by the adoption of a simple method of social insurance.

The American workman will endure almost any hardship rather than resort to charity, but sickness with its expenses and loss of earnings is the "last straw" forcing him down into dependency. First his savings go, then comes deprivation, debts to physician, landlord and grocer, loans from friends and commercial agencies, and, finally, destitution.

The tragedy of sickness to the wage-earner has been vividly suggested by Warren J. Pillsbury of the California Industrial Accident Commission, in urging social insurance as the only effective and economical method of coping with illness among workers, now so costly a burden to society.

"The present method of handling illness of wage earners," he says, "is as follows: The workman, becoming ill, struggles to remain at work as long as possible to avoid loss of wages, and refuses to go to a physician until the last moment because of fear of expense, thus preventing treatment at the time it is most effective—the early stages of the illness. When finally obliged to leave work, the income of himself and his family is ended. His savings will seldom last for more than a week or two of idleness. He then becomes a charge upon relatives, friends and public charity. Worry over his financial condition prolongs his illness. Inability to procure necessary medical and surgical appliances or to take proper rest or sanatorium treatment delays recovery. The children are taken from school prematurely and put to work without adequate preparation, or allowed to go upon the streets. Eventually he may go to the county hospital for a long period of time, and his wife will be taken care of by the Associated Charities, or will undertake work beyond her strength and in turn become ill. The employer has to break a new man into the work. The community, friends, or relatives have to support the family, and the man is inefficiently or haphazardly taken care of because of lack of organized social

endeavor to meet the problem presented."

This picture of the road to ruin, down which so many worthy, industrious, self-respecting working men's families are driven by sickness, is sadly familiar to all of us who come into day-by-day contact with the misery visited upon the toilers by accident and disease. It is because the number thus stricken is so great, and the social consequences so grave, that we in this country are setting about with facts and experience and enlightened purposes to provide an adequate remedy.

We now have available the findings of recent investigations by eleven official state commissions into sickness conditions among workers. These studies—notably those in Illinois, Ohio, Pennsylvania, California, Massachusetts, New Jersey and New York—present a vast body of illuminating data, covering widely separated and diversified industrial sections. And they are in striking and significant agreement as to the appalling extent of sickness among wage earners—an extent even greater than has hitherto been suspected.

LESSONS FROM DRAFT REVELATIONS

Still fresh in our minds are the shocking revelations of the draft as to the physical unfitness of American manhood at the ages when one would expect to find the very pink of condition. In New York, for instance, nearly *one-half* of the young men of 21 to 30 were rejected because they failed to meet the physical standards for military service. The same high percentage was found in Pennsylvania, another great industrial state. The average for the country as a whole was nearly one-third. This is a situation taking first rank among social problems.

What was thus disclosed with respect to young men in all groups has now been amply supplemented by official findings with respect to the wage-earning groups of all ages. It is helpful to an understanding of the relation between sickness and poverty and dependency to examine a few of the principal facts as to the crushing economic effects of sickness upon the workers.

From the Illinois investigation, which is one of the most searching and illuminating inquiries into this subject that has yet been made, we learn that one-third of the men asking for work in eight Illinois manufacturing plants, according to the company doctors, were found to be "diseased and defective." About one-fifth of these men were refused jobs because the doctors found them physically unfit for work. Here is raised an interesting question. What became of these men? Did they get medical aid until well enough to work, or did they go to work—sick as they were and possibly to the permanent injury of their health—for employers who were not so particular? Or did they become submerged in the army of the permanently incapacitated and unemployed—human derelicts?

The investigation discloses that between 20 per cent and 30 per cent—nearly *one-third*—of *all* workers are so sick that they have to remain away from work for eight days or more during every year. Time lost in a year by workers who are sick varied from 29 days among those in a group of "company funds" to 51 days among those discovered by house to house inquiries. Among workers who are sick for more than a week, two out of three will be sick for four weeks or less; one out of five will be sick from four to eight weeks; one out of fourteen will be sick from eight to twelve weeks.

The Illinois state investigation, in agreement with official studies in other industrial states, shows that the wage earners lose many millions of dollars every year because of illness and that large numbers are thus forced over the line from independence into dependency. In Illinois it is found that each year the workers lose in wages alone, because of sickness, the large sum of $35,000,000, while in addition they have to pay out each year about $11,000,000 for medical care. This runs about the same as for the other states; in Pennsylvania, for instance, the yearly wage loss due to sickness, figured at the rate of $2 a day, is $33,000,000; in New York it is $40,000,000.

LOW WAGES A CAUSE OF INCREASED SICKNESS

The Illinois report shows, significantly, that families having the *lowest wages* have the *most sickness*. These low wage families are most often obliged to run into debt because they are unable to bear the entire expense of sickness. Workers' families having sickness fall into debt three times as frequently as families having no sickness. Wage earners with large families of children under fourteen most frequently fail to stand up under the crushing burden of sickness and are forced to seek charity. Many families visited by sickness preferred to undergo severe hardships rather than appeal to charity. For every family that asked for charity, it was found, three families met their reverses due to sickness by leaving their bills unpaid, and two families sent wives or children out to earn money.

"The basic fact stands out," the commission concludes, "that the great majority of families with only one breadwinner and four or more children not over fourteen years of age are already in poverty, just at the edge of dependency. An acute illness pushes the family into dependency because of its necessary 'hand to mouth' existence."

The Illinois commission made a special, intensive investigation into sickness as a cause of poverty. Briefly it was found that:

(1) Eight charity organization societies outside of Chicago attribute to sickness chief responsibility in upward of one-third of the cases seeking relief in the year 1917–18;

(2) One-fourth of the poverty in Chicago in 1917–18 in the wage-earning families of the block study was accounted for by the loss of wages and sickness costs involved in disabling illness:

(3) An intensive study of a group of charity families indicated that the majority of these families had been economically independent prior to disabling illness; that the dependency risk due to sickness varied directly with the lower economic status of the family, and that chronic diseases, including tuberculosis, were responsible for two-fifths to one-half of all dependency resulting from physical disability;

(4) On the basis of a study of the experience of charitable agencies in Chicago (covering eight years) sickness was charged with *one-third* to *one-half* of all the causes or problems entering into dependency;

(5) A constant and more or less definite fraction of poverty and dependency must be charged to disabling sickness of the wage earner and the members of his family.

The condition here demonstrated has long been recognized by those engaged in relief work and in combating conditions that lead to economic distress and destitution. The New

York Board of Charities in its annual report for 1918 states that:

> The health of working men and their families is as a general thing poorly looked after. The sick one is apt to keep about his work after he has become ill and even when compelled to stop will often delay calling a physician. Likewise he will return to work sometimes before he is able to do so. A large amount of funds contributed by private charities for the care of families in their homes is made necessary because of illness. Studies of charitable work have made the proportion more than 50 per cent. In a study of 31,481 charity cases by the United States Immigration Commission in 1909, sickness was a factor in 38.3 per cent of the total number. At least half of this expenditure would be met in whole or in part by a system of health insurance. About 60 to 80 per cent of the expenditures of the New York Association for Improving the Condition of the Poor is for relief made necessary by sickness. Of the 75,000 persons whom the Boston District Nursing Association aid every year, nearly 50 per cent are unable to pay for nursing care. The Buffalo Charity Organization Society reports that for 1916 more than 78 per cent of the poverty was due to sickness.

More recently as the result of an investigation, Dr. Louis I. Harris of the New York City Department of Health stated in an article in the New York *Times:*

> The facts gleaned in this investigation cannot but help to give one whose point of view is at all altruistic a revelation of the need for health insurance because it shows how any illness may overthrow the economic balance which has been precariously maintained by a family and conversely it shows how illness may be produced or aggravated or recovery retarded by general economic changes.

A study by the Pennsylvania Health Insurance Commission of the cases coming to the United Hebrew Charities of Philadelphia shows that for the last five years sickness was figured as the main problem in each year's work—running from 39 per cent to 65 per cent. Seven Pennsylvania cities, through their associated charities, furnished detailed information showing that illness was the main factor in dependency of 41 per cent of the families in one city; 54 per cent in another; and for the rest, respectively, 44 per cent; 88 per cent; and 90 per cent. The Commission's report reads:

> In 1914–15, the great year of unemployment, in the 10,488 families asking aid from the Philadelphia Society for Organizing Charity the problems of unemployment numbered 4,237, while the illness problems were 3,867, a difference of but 870. This is another instance of the fact that even in a panic year, where one reason for dependency asserts itself so strongly, sickness is a steady factor.

The trail of sickness disaster leads not to charity alone; all too frequently it goes on to end in the poorhouse. The state investigation in Ohio covering 22 typical county infirmaries, uncovered the fact that more than 29 per cent, or nearly one-third, of those in the poorhouse haye been driven there by disease.

> In the ordinary Ohio county infirmary, those temporarily sick, the hobo, the permanently disabled by sickness or accident, the feebleminded, the partially insane, the epileptic, the old and infirm and the deformed represent the different types to be found. . . . Of the 2,260 infirmary inmates of whom a detailed study was made, it was possible to obtain information in regard to the most important cause of poverty in 1,608 cases. Disease, sickness or accident was given as the most important cause of dependency in 29.9 per cent of the total number of cases.

WAGE EARNERS RESIST CHARITY

It must be said in passing that these investigations all show the most desperate resistance by the workers and their families against being forced upon charity by sickness. Those large masses whose low wage scales keep them always dangerously close to the bare margin of existence are the first to fall into dependency when stricken by illness; nevertheless they are found bravely resorting to all possible expedients rather than appeal to charity. Here is a tribute to the self-respect of the American workingman.

Light is thrown on this aspect of the

problem by studies made of small chattel loans advanced to workers by commercial loan agencies. The Morris Plan bank of New York City—where some 70 per cent of all the loans were under $100 and 30 per cent under $50—reports that sickness and death constitute the most frequent cause for borrowing—an experience not unlike that of the relief societies. The Ohio Health Insurance Commission secured information from remedial loan societies throughout the country asking for information as to the extent to which loans were made on account of sickness. In those cities which have established Morris Plan banks or similar institutions thousands of working men avail themselves of this means of borrowing upon their own credit when need arises. In this group which more nearly represents the rank and file of the more substantial workers, the evidence of the burden of sickness is plain. The Chicago Morris Plan bank, for instance, compiled statistics in February, 1918, for 6,510 loans and the results showed that 20 per cent were made on account of sickness and death. Reports received from 21 states and the concensus of statistics and opinions as to remedial loan institutions, generally, show that from 30 to 50 per cent of loans were due to sickness—impressive evidence of the burden of sickness.

The economic disaster so caused by sickness is due to the uncertainty with which sickness visits the individual. The individual cannot foresee the occurrence of illness nor its duration: if he is to have adequate protection he must be prepared at all times to defray the expenses of a maximum period of illness. But this maximum provision by each individual is financially impossible. Moreover, provision for, say, six months' illness by each individual even if it were possible, would be unduly extragavant. Sickness distributed among all workers averages about nine days a year. This sickness is confined to something like 20 to 30 per cent of the workers; and of these, illness of six months' duration is limited to approximately 3 per cent. From the standpoint of sickness prevalence alone, it is wholly unnecessary that every individual, sometimes at the sacrifice of present necessities, should prepare himself to meet the misfortune which will annually overtake less than 1 per cent of the entire group. The economical method would be to pool the savings for sickness, each contributing to a central fund sufficient to cover the annual average of nine days' sickness—a fund from which the 20 to 30 per cent who are sick may draw. The whole problem is one for practical application of the insurance principle. It is a social problem; the remedy lies in social insurance.

SOCIAL INSURANCE THE REMEDY FOR SICKNESS LOSSES

It is true that recognition of the advantages of the insurance method has already led to the development in this country of health insurance by commercial insurance companies, establishment funds, fraternal organizations and trade union funds. But official investigations have shown that only a small portion (in Illinois it was found to be less than one-third) of the wage earners are protected against sickness by any form of insurance; that the payments are insufficient; that the benefits rarely include necessary medical care; that commercial insurance is highly expensive and limited mostly to mere funeral money; and that those who need insurance most—the low wage families, who are closest to the line of dependency—are now without it.

Figures show that workers who carry industrial life insurance in the stock companies operating for profit have to pay $1 for every 60 cents that is returned to them in burial benefits. The other 40 per cent is taken to pay heavy office expenses, agents' commissions and profits.

Adoption of social insurance laws in the United States, similar to the bill now before the people of New York State, will be followed with marked benefits in distributing the burden of sickness losses, covering sickness costs and eliminating or reducing disastrous deficits that are driving workers into poverty and dependency.

The painstaking investigation in Illinois in this connection has brought out the encouraging estimate that of a group of families experiencing downward shifts in economic status due to sickness, 30 per cent would have had sickness costs completely covered under health insurance legislation, and approximately 85 per cent would have had them either covered or considerably reduced (60 per cent or over); that the proposed health insurance law would have *prevented* a considerable proportion of poverty and dependency caused by sickness; that the reduction in poverty caused by the year's sickness would have been about three-fourths; and that the highest reduction to be expected through workmen's health insurance, in the cases of dependency caused by sickness, is one-half.

It must be remembered that, aside from public and private charity, the burden and the cost of sickness under existing conditions is borne entirely by wage earners. This is unjust and anti-social. Industry is partly responsible for the sickness of wage workers. Careful studies have indicated that industry is responsible for about one-half of the workers' illness. Industry is certainly responsible to the extent that unhealthful conditions of work tend to breed sickness among workers. The whole community, too, is responsible at least in the degree that it fails to take preventive measures against disease and epidemics. Among the contributory causes of sickness for which industry itself is responsible may be mentioned unsanitary work places; fatigue due to standing, noise, monotonous work; speeding up due to piece work; working seven days a week; alternating day and night shifts; and long hours.

THE PROBLEM OF OCCUPATIONAL DISEASES

In a very few kinds of industrial illness, such as lead poisoning and anthrax, the direct responsibility of industry can be clearly proved, and such sicknesses are termed occupational diseases. It is possible to furnish protection in such cases through workmen's compensation laws, but even then only a very little measure of relief is afforded because the number of occupational disease cases compensated is very small compared with accidents, and smaller still when compared with the total amount of sickness among wage earners.

Dr. Alice Hamilton, a medical expert, well-known authority on occupational diseases and member of the Illinois Health Insurance Commission, points out: "It is safe to say that the greater part of industrial sickness of which industry is either an exciting or contributory cause, is not yet recognized as industrial nor provided for by law."

The United States Public Health Service, in a favorable report on the relation of workmen's health insurance to the public health, says that: "There is no longer any doubt that modern industry is responsible for a consider-

able proportion of workingmen's physical ills."

The Pennsylvania commission informs us that "79 per cent of all the deaths of persons of working age in one year were from diseases whose connection with important Pennsylvania industries has been established."

Industry, therefore, should bear half the cost of social insurance. The worker, by assuming the other half of the cost, will take care of the full proportion of sickness for which he, himself, is responsible. Organized labor in America is strongly demanding sickness protection, including maternity benefits. The workers have known at first hand the deplorable conditions now so clearly proved by all these official investigations. That is why no less than 21 state federations and 29 international organizations have gone on record for workmen's health insurance laws.

As Dr. John A. Lapp, managing editor of *Modern Medicine*, and director of investigations of the Ohio State Health Insurance Commission, said in a recent address before the American Association for Labor Legislation, in reviewing the findings of all these official commissions:

> The case for compulsory health insurance is fully made up by the eleven reports of official state commissions. It seldom happens that the evidence is so overwhelmingly one way. The reports indicate clearly the nature and effect of the sickness calamity. They prove that existing provision for sickness care and prevention for wage earners are utterly inadequate. Finally, they show that coöperative measurement of the burden and collective action through social insurance is the logical way out.

The conditions calling for an immediate and adequate remedy have indeed been made plain to us by these studies. *They have demonstrated that in from 35 to 80 per cent of the calls on organized charity the principal factor is sickness; that 30 to 50 per cent of the loans to workers by such agencies as the Morris Plan banks are forced by sickness; that about one-fourth of all workers are so sick that they have to remain away from work for eight days or more every year; that fully one-third of those too sick to work are without medical care; that families with the lowest wages have the most sickness; that probably 50 per cent of this sickness is due to health hazards in industry over which the workers have no control; that one-third of those in the poorhouses have been driven there by sickness.*

UNIVERSAL HEALTH INSURANCE

Here is a condition calling for preventive and remedial work which will be effective only through universal health insurance. The proposed health insurance bill, as now developed after many consultations with representative committees of all groups affected, provides a cash sickness benefit (to keep the wolf from the door and spare self-respecting workers from resorting to charity when illness cuts off earnings); adequate medical care (to detect and remove incipient illness before it becomes chronic, to restore the sick worker to health and normal productive powers and to keep him so) and a funeral benefit as under the workmen's compensation law. It also provides a maternity benefit for an insured woman or the wife of an insured man including medical care and, in addition, a cash benefit paid for not more than eight weeks to an insured woman worker.

The benefits will be administered by local mutual organizations or "funds." Employers and workers have equal control over the "funds," thereby insuring democratic management under the general supervision of the State Industrial Commission.

The cost, amounting on the average, it is estimated, to about 3 per cent of wages, is to be shared equally by

employers and workers, the state bearing only the nominal cost of central supervision, as in workmen's compensation.

The head of the central health insurance bureau is to be a physician, county medical societies are given the power of initiating the fees to be paid by the insurance funds for all medical service and in other ways the economic interests of the medical profession are fully safeguarded.

Private industrial insurance companies, operating for profit, are prohibited from doing business under the health insurance act so the benefits may be provided at actual cost.

Sickness in industry causes more than six times as much suffering and dependency as that due to industrial accidents. Workmen's accident insurance now protects the workers in case of injury; workmen's health insurance is needed to protect them against the greater hazard of sickness. The late John Mitchell, addressing the Conference of Catholic Charities shortly before his death, declared:

"Public sentiment in this country is developing rapidly in favor of universal health insurance for wage earners, including maternity benefits; and my own observation, through long experience with the ravages of accident, trade disease and sickness among working people and their families, leads me to the conviction that health insurance is even more important than workmen's compensation."

The *preventive* side of workmen's health insurance is of great importance in any discussion of sickness and poverty. This is tersely set forth by the United States Public Health Service in its health insurance report which says:

> Experience has shown that insurance is an efficient method of coöperation. As defined by practically all authorities, insurance is primarily a method by which a group of persons, each singly in danger of some loss, the incidence of which cannot be exactly foreseen, can distribute such loss, when it occurs to any of them over the whole group and in such a way that the burden of expense will be lightened of its most serious effects. Secondarily, and of equal importance, insurance means that the strongest of incentives —that of lessening cost—is given to efforts to diminish the frequency and the seriousness of losses. In this latter sense insurance is a *preventive* measure of a positive and direct sort. It cannot be denied that fire insurance has been one of the most potent factors in the now well-organized movement for the prevention of fires. Marine insurance has resulted in more rigid inspection of vessels, the erection of lighthouses, and in many other measures designed to lessen the chance of wreck. Liability and compensation legislation—which is but another name for the insurance of employes against accidents—has resulted in the nation-wide movement for "safety first." . . . Experience has shown in all instances that while the distribution of cost is primarily the *method*, prevention is primarily the *purpose* of insurance, and certainly its *result*.

So, in the same way that workmen's compensation has stimulated the great "safety first" campaign, workmen's health insurance laws may be counted upon to result in a great "health first" movement—for the simple and compelling reason that "it pays."

Finally, is it not significant that a majority of the eleven official state commissions, upon the results of their recent investigations into sickness conditions among workers, have strongly urged the adoption of workmen's health insurance laws? And is it not also significant that the greatest industrial nations of the world, with the single exception of the United States, facing the same serious problems, have found a successful remedy in compulsory health insurance?

The Foreman—His Training and Education

By Benjamin E. Mallary
Department of Industrial Education, Cleveland Public Schools

THE foreman has of late become a conspicuous target at discussions relating to industrial problems, particularly on labor relations. His was the keynote problem of at least one national convention. Unless extreme caution is followed, our experiments on the foreman will end as fruitlessly as many other labor experiments. The problem of education and training in this field as in others must be met with an understanding of human nature and a consideration of fundamental principles. Already the remedies suggested are many, and testimonials of "wonderful results" are easy to secure. The industrial "quack" learned early that industrial education is a profitable field because the results do not lend themselves to accurate measurement. Few industrial managers have made a study of the educative process, thus they have no basis for judging the extravagant claims of the pseudo-educator.

This note of warning is not intended to minimize the problem but rather to emphasize the necessity of slow and sound procedure. The old adage might well read, "There is no royal road to foreman training." One manager says, "We spent six months analyzing and studying the problem, and three months preparing the foremen to be receptive to our training course. It paid. We found this problem as subject to analysis as any of our other production problems."

Fortunately, the principles of education and best methods of training are known. How can they be adapted to the education and training of foremen? In order to go into the subject more thoroughly the writer is limiting this article to a treatment of the problem as it relates to the foreman in service. The same principles will apply largely to the training of apprentice foremen.

This principle is established: foremen cannot be formally trained without their own consent. More than that, they must be actively interested in their own development. This cannot be done by calling them together, giving them a fine banquet, and arousing their enthusiasm by the evangelical methods of the religious "exhorter." They will be converted to the cause temporarily, but the back-sliding will be under way before the next morning's starting whistle blows.

Foremen will not be interested in any scheme of education unless they feel a need for it. Most of them do not feel this need. They are not aware of the deep problems connected with their work, nor should they be blamed for this condition of affairs. They are as much "sinned against as sinning." What is there in the average foreman's job that promotes deep thought? Is he not subject to that host of mind paralyzing influences which invariably accompany routine duties, system and quantity production? One foreman answered the question by misquoting the following: "Ours not to reason why, ours but to do or die." Foremen have not had the mental stimulation that comes of a man's "making his own job." Today the feeling of the old-time foreman who realized deeply his responsibility for all that went on in his department is rare. Many feel them-

selves to be the pawns of the experts, the executive tools of the brains in the "front-office." Their work is cut out for them by the superintendent. It is planned for them by the production engineers. "Why should I think," asks Bill Jones, a foreman, "when what I am to do is being worked out on paper by the boys with the white collars and the college education?" "They don't have to follow my advice, but they might ask for it once in a while just to make me feel good," says another. Should we wonder at the charges which management brings against the foreman of "lack of coöperation," "unappreciativeness" and "policies that never get down to the workers." One foreman has put it this way, "I would be d— glad to coöperate with the labor manager if he would only act as if he felt that I also am a labor manager —in my department. He spends more time downtown with those employment managers from the other plants than he does with us labor fellows here in this organization. Why don't he talk over with us what he reads; what they talk about; what they say at those conventions which he attends. All we hear from him are calls over the 'phone as to why this man was fired or that one quit. I'd like d— well to work with him but he won't let me." That statement does not stand out alone. It is typical of the opportunities for foreman training that are slipping by every day. How easily might a desire for education be created in that foreman. In fact the desire is there—latent—unrecognized.

NECESSITY FOR SOUND MANAGERIAL POLICIES

An industry that is not organized on sound managerial policies cannot afford to introduce formal foreman training. Training presupposes certain standards of perfection to be attained. Unless standards of policy, system and methods have been well worked out there is no goal for foremanship. Education and training must have a goal. This is true of any shop or system of industrial education. Unless the standards set up by the management rest on sound principles, the foremen will find the goal illusory. Let us be frank. Can we afford to have our foremen think about our policies, analyze our systems, criticize our methods? Any other system of foreman training except that one which is based on things as they are in the shop, today, will be found wanting—by the foremen. From what "is" the foreman will think soon of what "might be" or "ought to be." Will the management be willing to "go all the way" with the foremen if they should become educated and get a vision of a better day in industry? There will be destructive criticism at first; that is to be expected. However, it is in the turning of this destructive viewpoint into constructive channels that the process of education functions. The foremen will view the classes as an opportunity to start making things right in the shop. If the management has the confidence of its foremen such educational classes may be the one common ground for all to start on, to work out right policies and methods together. A management whose foremen are disloyal has no basis whatever for starting foreman training. Disloyalty is a mental barrier that will resist any and all attempts at formal education. In such a case the first step would be the regaining of lost confidences and the mending of broken trusts.

No textbooks, or other commonly used tools of education, are necessary in order to start foreman training. A real interest in the problems of industry by some member of the managerial force is the first requirement. An hon-

est desire to share that interest with some foreman is the second. Talk with this foreman about the things that are going on in the managerial world. Consult with him about, but never settle some grave production problem. Give him plenty of food for thought. Loan him a book to "look over" and report to you as to the advisability of recommending it to others. Take him to a meeting of the local engineering body or production managers association, provided the programs can be grasped by him. If your educational seed has fallen on fertile ground and you have nurtured it well, this foreman will soon be a center of educational propaganda among the other foremen. Deep interest is contagious.

Someone, preferably a foreman, should take the step to crystallize this increasing group interest into a formal request to the management for more favorable opportunities to work out their problems together. At this point the management will be tempted to take from the foremen the control of the future foremen's school. This should not be done. Let the foremen appoint a committee to work out, with the management, the ways and means of the school. The responsibility of this committee should never cease to be to the foremen first and to the management last. The management will, in the end, have to do most of the administrative work connected with the school, but they should never reach the point where they assume all responsibility.

Out of the foremen's schools which have been conducted in different parts of the country there is growing a definite body of knowledge on this problem. The writer has attempted in the following brief outline to embody the best practices which have come to his attention through correspondence and discussions with teachers, administrators and representatives of industries where the work is being conducted. He has personally observed the success of most of the methods presented. These methods are all more or less flexible and local conditions must govern their application.

ORGANIZATION OF THE SCHOOL

The classes should have enrolled in them men of equal rank. Where foremen and their assistants are in the same classes, discussion is repressed. Both subordinates and superiors usually hesitate to reveal their true opinions on a problem in each other's presence. This is far from being an ideal situation, but it is one which exists in most industries. Where mutual confidence prevails, mixed classes will succeed.

There should not be less than eight nor more than fifteen men in a class. It is hard to keep up interest if the group is too small. The discussion must always be kept alive. If there are more than fifteen the discussion becomes unwieldy. Each member does not get sufficient opportunity to take part.

Enrollment should not be made compulsory by the management. If the foremen themselves cannot succeed in persuading an unwilling fellow-foreman, compulsion by the management will not make him learn even if he is coerced into attending.

Attendance on the part of those enrolled should be compulsory. Once a man has expressed a desire to go through with a certain program undertaken by a group, he is under obligations to the group to "see the thing through." In order to succeed, an educational program must have the support of all until the end is accomplished. The absentee has a depressing affect upon a class. His absence

unconsciously suggests to the class the questionable value of the work which they are doing. Regular attendance should be one of the conditions of enrollment.

As to the time of the meetings of such classes, opinion and practice differ. There is almost unanimous agreement that they should be held on company time and as early in the work day as possible. If the educational work is considered important it should hold such a position in the foreman's daily schedule. An hour or two after the work day has commenced the foreman should have sufficiently adjusted the day's problems and so arranged his duties as to enable him to attend a nine or ten o'clock class. His mind is still fresh and in a condition to tackle the problems of the class discussion. One of the advantages of holding classes during working hours is that it forces the foreman to so organize his department that it will function efficiently during his absence. Foremen soon come to take a pride in a self-running, self-adjusting department. It also gives the assistant foreman an opportunity to grow through the assumption of responsibilities.

As to frequency of meetings, one hour twice a week is better than two hours once a week. It is better to cut a discussion off at the end of an hour while it is still hot than to allow it to drag out until it cools. Two hours is too long to attempt to hold the attention of foremen. Meetings held more often than twice a week make the training too intensive. There must be time between meetings for the ideas to be mulled over and considered. Two weeks between meetings gives too great an opportunity for interest to slump.

Classes should start and stop on schedule. While apparently a minor rule, its violations have subtle and far reaching effects.

All the physical equipment that is necessary for this work is a quiet, well lighted and well ventilated room; a table large enough for everyone to get their feet under at the same time; substantial, comfortable (but not easy) chairs and a blackboard.

The first meeting should be devoted to a mutual working out of a few simple rules to guide the conduct of the meetings, such as: "all men take part in every discussion," "only one man talk at a time," "treat each problem discussed as impersonally as possible," "speak briefly and to the point," "attend every meeting and always be on time." Some member of the group should be appointed to assume the responsibility of reminding the members of the meetings at least one hour before the time scheduled. This increases attendance and decreases tardiness.

COURSE OF STUDY

The selection of the course of study is dependent upon the aims to be attained. The goal of training is different from that of education. Training implies that a foreman should receive definite information and form definite habits of action in order to function efficiently. Education attempts to develop his latent abilities. The former is more narrow in its scope and easier to attain than the latter. Probably each are equally important. Whether one or the other, or a combination of both is to be the aim of the school, must be decided first. It is the personal opinion of the writer that education must precede training. While a combination of both aims would be ideal, it presents a problem too difficult for the average instructor.

A very successful course of study was worked out by the foremen of a certain industry. Each foreman presented a long list of his own problems,

those which came up almost daily in his department. In all, there were about seventy-five different problems presented. These were classified under different subject headings by a committee of the foremen under the leadership of the instructor. After such classifications it was possible to arrange a schedule for discussions lasting over several months. This plan possessed several ideal features. The foremen did most of the work themselves. None could deny its practicability. Any problem could be remedied either in the light of necessary training or education, depending upon which one was needed. If the problem concerned cost records, the instructor reached for the telephone and called the cost accountant to the class room immediately to straighten out any misunderstanding. If the problem needed tact for its solution, there was always one tactful foreman or more present to reveal their method of handling the problem successfully.

Most of the courses for foremen sold commercially are good, provided they meet the needs of a particular plant, can be readily grasped by the minds of the foremen in the plant and can be presented successfully through the facilities which that plant can provide. No course of study can be lifted bodily from one industry and set down unchanged in another with any measure of success. The purchased or borrowed courses and the other factors of foreman training must each be so modified that they form an educational project in line with the aims to be attained.

THE INSTRUCTOR

The securing of a real instructor is the most difficult problem of foreman training. A man who has worked up an elaborate course in foreman training may fail as an instructor because he lacks the qualities of a teacher. The teacher secured from the local public school system or some private educational institution may be unable to succeed with foremen. There are instances where foremen, without any teacher-training whatever, have made a phenomenal success with a class of fellow-foremen. They were natural teachers. A works manager, in a middle western industry, took over the instruction of his foremen after a professional teacher had failed on the job; he succeeded. His case is exceptional. The average industrial technician or executive lacks most of the qualities necessary in a teacher. Real teachers are rare. It will pay to search until one is found. A lack of knowledge of production problems need not necessarily disqualify one who is otherwise a real teacher. Knowledge of production can be easily acquired. Love and understanding of one's fellowmen, infinite patience, ability to inspire and a positive personality are qualities not easily acquired. It is hardly necessary to state that this teacher should possess a natural sympathy for the foreman and his troubles; that foremen should feel at ease in his presence and that they respect him highly.

INSTRUCTION METHODS

The best results have been secured by using the discussion method of instruction. This method develops the foreman by getting him to take part in a discussion. The closer the discussion comes to the foreman's interests, the greater the development. It is the instructor's business to so word a problem or ask a question that it will produce the greatest amount of thought and discussion. By skilfully directing the discussion, certain pre-determined conclusions or principles of foremanship may result.

One of the tests of the success of this method is whether the foremen arrive at a successful solution of the problem themselves or whether the instructor, becoming impatient, settles it for them. If the latter, great educational benefit has been lost. The greatest mistake which instructors of foremen make is to do the thinking for the men. There are times when lectures are necessary but the amount of self-development derived by the foremen usually varies inversely as the amount of talking or preaching done by the instructor. The instructor should appreciate that a man who has been a foreman from five to thirty years has performed at least some successful acts in handling men and that it is his duty as instructor to get this man to talk, to lay bare his experiences for the benefit of the other fellow or the other fellow's criticism. It is the instructor's duty to lead the men into making constructive rather than destructive criticism of existing policies, methods or conditions. If this one aim is accomplished, the course will have repaid all the efforts expended on it.

On the other hand, there are certain phases of a foreman's work which can be treated best by means of the lecture or demonstration. Discussion would reveal the value to industry of accurate cost analysis; that is education. Discussion by foremen of the detailed application of a cost system would result in utter confusion of ideas. A lecture on cost systems with detailed explanation of the foreman's duties regarding it accompanied by enough practical demonstration to fix its workings in the foreman's mind would be training. There are technicalities in each industry which are conceded to be uncontroversial as far as the foremen are concerned. It is highly desirable that they know about them. Here the lecture method would bring the best results.

New industrial movements such as foremen training have a tendency to diverge from their goal. As we tinker with and fashion the parts which make up the means to the end we become absorbed in the technique. The development of the foreman is far more important than any course of study or method of training. The spirit of education must live. The foremen must carry it from the class room to the shop. It is the spirit of human development, so necessary to true industrial democracy.

Research and Production

By Harrison E. Howe

Chairman, Division of Research Extension, National Research Council

THERE seems to be no question that economic production of proper quality is the basis of prosperity in any industry. Quantity production frequently makes possible the domination of a market and in the past has been possible without the extensive application of research, principally because raw materials have been sufficiently abundant, labor has been comparatively inexpensive, and in many fields competition has been restricted because of undeveloped transportation facilities. This time in general has passed, and even in those industries where raw material is still abundant it is found necessary to engage in research if for no other reason than to guarantee supplies for the future.

Research Defined

The term "research" is applied to the effort made in new, original directions to solve problems by the application of science and the scientific method. It involves learning what has gone before and is almost always preceded by a careful search of literature. It may be undertaken either to solve some problem in pure science, something with reference to commercial application or, in industrial research, it may mean the application of all the information that has been secured to the solution of an industrial problem. This may concern raw materials, processes, the utilization of wastes or the improvement of products. At times it may take the form of an order for an invention when the research laboratory endeavors to produce something entirely new for a given purpose. Research, then, no matter what may give rise to it, is sure in the long run to benefit industry and react advantageously upon production. This, in turn, directly benefits the producer in every part of an industrial organization. The success of research in this field can best be illustrated by a number of examples chosen to emphasize particular phases.

Research in Illumination

The influence of proper lighting conditions upon the health, comfort and productive capacity of the workmen is well recognized. These facts have been established by research and these conditions have been improved in proportion to the knowledge we have gained by careful inquiry into the laws and principles of light and illumination. The mercury vapor lamp, such as the Cooper-Hewitt, a result of scientific endeavor, is well adapted to illumination for some types of work. More commonly, types of incandescent or arc lamps are employed, and one of our most fascinating stories of research centers around the production of these modern lighting units. We can recall the days of the comparatively dim carbon lamp. A little later the Tantalum filament was introduced, followed by tungsten, but these filaments were fragile and the lamps were short-lived. Behind it all there was the most intense competitive research going on in Germany and America for it was realized that to make these more efficient lamps commercially possible a way must be found

to draw tungsten into fine wire. Owing to the characteristics of the element this seemed an almost impossible feat, but in the end American research won and ductile tungsten has become an article of commerce. Through this step America won the incandescent lamp industry which has since been more firmly established through researches begun in pure science on the conductivity of gases. We now have incandescent lamps filled with inert gas, and the use of the vacuum with the carbon filament is rapidly disappearing.

Today, a manufacturing establishment can be much better lighted, the illumination better controlled and the worker given these advantages at far less cost than would otherwise have been possible. We are told that if we were all using the old-type carbon filament today the annual electric lighting bill of the nation would be at least four hundred million dollars greater than it is now. Research, therefore, has provided lighting units to enable the maintenance of production under otherwise unfavorable light conditions without detriment to the workmen. Few things interfere with normal and increased production more than poor illumination. Modern science makes it comparatively simple to overcome this defect.

RESEARCH SHORTENS PROCESSES

"Speeding up" is a familiar phrase in industry and can only be realized with the help of scientific research. In the rubber industry vulcanization is a necessary step which in the past required at least two hours. We are using increasing quantities of rubber products and items of equipment are very important, requiring as they do great outlays of capital upon which dividends must be paid. If, then, research can make it possible to turn out a greater number of tires per day with the same equipment and the same amount of labor, surely the condition has been so improved that both labor and capital profit. This has been accomplished by the use of organic accelerators of vulcanization. These are amino derivatives, now recognized as catalysts which assist in carrying the sulphur to the rubber molecule. A rubber mixture containing such an organic accelerator can be properly vulcanized in thirty minutes instead of the two hours formerly found necessary. A manufacturer, therefore, can vulcanize three or four times as many tires with the same equipment as formerly.

The modern tool steel is another example of what research has done in increasing production. The new alloy steels in which some of the unusual elements are combined with the iron are capable of retaining their metal-cutting properties at much higher temperatures than the older type of high-carbon steels. This means that a lathe can be operated much faster without spoiling the tool, and a plant which has been using carbon steel can accomplish nearly three times as much work if the modern tool steels are substituted. Those engaged in research on tool steels believe that an even better record can be made, and during the war a new alloy of tungsten, cobalt and chromium proved to be even more efficient than the somewhat older types of alloy steels.

In connection with metal cutting, it should also be noted that production has been improved through researches upon lubrication and the various cooling and cutting compounds which make continuous work possible. Another step has been taken in providing ways for recovering these oils and lubricants from the metal chips, at the same time so clarifying it that it can be re-used with safety and economy.

Another example can be drawn from the textile industry. At one time our only means of bleaching was the tedious process of spreading cloth upon the grass, where it remained in sunshine for days. Later came chemical methods which at first were uncontrolled and their reactions little understood. Research found in one case that the reaction which was believed to require thirty hours could be made to go forward efficiently in forty-five seconds under proper temperature and pressure control. This meant that only one-fifteenth of the capital was required for apparatus, raw materials and investment in goods in process.

Not only can production be increased in gross volume but the net output is affected through the scientific control of raw materials. Science enables us to choose with considerable accuracy the raw materials which are suited to a given operation, and this means fewer rejections and imperfect parts, all of which has a direct bearing upon the economy of production. There was an instance where a hardened steel part was made for army equipment. The material had to be formed and hardened afterward. One of the manufacturers, finally realizing that it was a scientific problem, had a piece of research done upon the process after it had been demonstrated that his usual method of working resulted in a very high percentage of rejections. In a short time a metallurgist found the difficulty and was able so to modify the process that from that time on there were practically no rejections and the plant in question was able to get by far the largest share of orders for that particular device. Obviously, production that results in unsatisfactory merchandise is a failure, and in so far as research can assist in avoiding such failures it unquestionably has an important bearing upon production.

Research also affects the economy of production, enabling materials to be made at a price which guarantees a great demand, and thereby directly benefits both labor and capital. An example is the use of vanadium steel for certain parts of automobiles. The work which these parts are called upon to perform necessitates the use of a steel such as high-carbon steel, which is very difficult to machine. Vanadium steel meets the specifications and has the advantage that it is easily machined, so that the part can be supplied at approximately one-half the cost which would be necessary but for the alloy steel which research has given us.

WASTES PUT TO WORK

Many examples of this type could be cited, but the influence of research upon the economy of production cannot be passed without referring to waste recovery and utilization. In the production of better grades of mirrors, metallic silver is precipitated upon the glass by means of a chemical process. Under ordinary conditions a very small per cent of the silver is deposited upon the glass, the majority being plated out on the containing vessel and deposited in it in the form of a "mud." The character of this mud was soon determined and methods devised for its recovery and re-use. More recently we have learned how to control the reactions so that a far greater quantity of the silver deposits where it is wanted, with the result that the whole operation, including waste recovery, is simplified and made less expensive.

In the wool industry, research has provided means for recovering values from the wash-waters which, during the war in the case of one large mill, produced a revenue sufficient to pay the dividends on its capital stock.

The recovery of this waste was a direct benefit to the community health, through the removal of a putrefiable waste from sewage, and a producer of profit for the mill in question.

One of the classical examples of waste recovery through the application of research is to be found in the cement industry, where the application of the Cottrell electrical precipitating method first made it possible to strip fumes and waste gases of the dust which otherwise settled with devastating effect upon surrounding vegetation. Later it was found that this dust contained most of the potash present in the raw materials entering into the cement, and in at least one case the mill could be operated entirely upon the proceeds from the sale of the recovered potash, making the proceeds from the sale of the cement clear profit.

INCREASING YIELDS

The incease in yield from a given operation is another instance of what applied science can accomplish. Such increases follow a close study, from a scientific standpoint, of the factors which underlie the reaction. These include time, temperature, pressure and concentration. True, it frequently occurs that a process is developed without the aid of science and finds its optimum conditions for working to lie within certain narrow limits, but until we know why we carry on a process in a given way, as well as how to proceed with the work, we cannot expect the best results. Research learns the "why," and when employed in advance eliminates the many costly errors that always follow rule-of-thumb methods. Knowing the underlying principles of a reaction, the scientist can calculate very closely what should be done to produce a maximum yield, thus greatly lessening the amount of time necessary for experiment. There is an example in the dye industry where a yield of but 10 per cent was increased to 95 per cent by merely prolonging a stirring operation five minutes at one point in the process.

In our greatest industry—agriculture—we find many illustrations of increased production due to the application of research. In Connecticut a close study of the tobacco plant resulted in learning how to secure two or three times the number of leaves suitable for wrappers with the same expenditure of energy in cultivation. On the Pacific Coast hybridization has produced a walnut tree that grows with the rapidity of the poplar and begins to yield years in advance of the time that would otherwise be possible. Applied to wheat, scientific research for new varieties has already introduced into our country types which have added millions to the value of the wheat crop and benefited capital and labor alike from the farmer through the chain, including elevators, millers, exporters and wheat products manufacturers, to the consumer.

Turning now to the electric field, consider the production that has been made possible by spot welding, arc welding, and the utilization of the electric furnace. The influence upon industry in general of electrochemical and electrometallurgical products constitutes one of our most important industrial chapters. Upon the achievements of research in these fields depends the present efficiency of some of our greatest industries. Thus ferro silicon, an electric furnace product, is a necessity in the production of open-hearth steel, which constitutes something like 70 per cent of our total tonnage. Researches in the field of the electric furnace and its application have given us much of our alloy steels, to which reference has already been made. It has also made it possible to utilize scrap and even foundry sweep-

ings in a way which has heretofore entailed much more expense and time. Those who have occasion to do metal cutting and brazing also have reason to appreciate research, which has given us large supplies of oxygen and hydrogen at commercial figures and has made acetylene an article of commerce.

RESEARCH IN THE HUMANITIES

Scientific research on the human factors in production is in its infancy. But the problems are now well defined, and the technique for studying them is being rapidly improved. In certain large industries as diverse as textiles, automobiles, meat-packing, paper, rubber and electrical equipment, essentially the same types of systematic records and statistical analysis of industrial personnel data have been found helpful in locating unsuspected causes of dissatisfaction and unrest, and in pointing the way to necessary changes in working conditions and in methods of supervision, training, placement, promotion and wage adjustment. Improved analyses of jobs and the requirements they make of the workers have been coupled with more intelligent attention to the individual workers, their varying abilities, aptitudes and ambitions; and the systematic effort to adapt the jobs to the workers, as well as to equip the workers for their jobs, has increased the satisfaction of the employees while increasing their earning power and their wages.

SAFETY IN INDUSTRY

Safety for the worker has not been overlooked by research. Perhaps one of the best examples may be drawn from the match industry, where "phossy jaw" was a terrible possibility for all those engaged in the preparation and handling of match-head mixtures. The red phosphorus used was somewhat less toxic than the other form of the element, namely "white phosphorus," but after a considerable series of researches it was found that phosphorus pentasulphide was the compound which could be substituted with satisfaction so far as the final product was concerned and with complete safety to the workers. This was really a wonderful achievement and the patented results were later assigned to the public, the company originating the process believing that while it gave them an insurmountable advantage over competitors the process was so closely identified with preservation of the health of match workers that it would be far better to allow any who cared to use this result of research to do so.

In the vulcanization of rubber, to which reference has been made, there were certain dangers accompanying the use of the first accelerator suggested, but these dangers have been greatly minimized by the employment of more recently developed compounds and by the re-designing of the mixing apparatus in which the materials are incorporated. Another notable example of the efforts of research to protect labor is found in the researches of Sir William Crooks who developed a glass to be used in goggles that affords almost complete protection against ultra-violet light, and another type which likewise protects the wearer from the infra-red or heat rays. The ideal would be to combine this ability to protect the eyes in one type of glass, but so far this has not been possible with the necessary degree of visibility. Another important part of the goggle has been made safe by the substitution of cellulose acetate for the nitrate, the former being non-inflammable or slowly burning. Celluloid continues to be a subject of research and some progress has been made in rendering it less inflammable, thereby directly af-

fording increased protection to those obliged to work with this material.

LABOR'S INTEREST IN RESEARCH

Labor, therefore, no less than capital, is interested in the relation between research and production. This interest comes not only because of the immediate concern of workers engaged in a particular process, but also because they in turn desire to have available for their own use the many products which modern science makes possible. This includes most of the things now looked upon as necessities as well as those which are admittedly luxuries. Most of these materials must be produced economically and in quantity if they are to be available at a price within the reach of the majority. Such production is not possible without the application of scientific method and the utilization of all that research has to offer or can provide. An industry founded upon a science, such as the electrical and the dye industries, in most respects is advanced beyond those industries which fail to recognize the fact that they are in many instances carrying on processes involving reactions which cannot be fully understood without the aid of science. These resolutions adopted in 1919 at the Atlantic City Meeting of the American Federation of Labor indicate clearly that labor is coming to appreciate the significance of research:

"WHEREAS, Scientific research and the technical application of results of research form a fundamental basis upon which the development of our industries, manufacturing, agriculture, mining, and others must rest; and

"WHEREAS, The productivity of industry is greatly increased by the technical application of the results of scientific research in physics, chemistry, biology, and geology, in engineering and agriculture, and in the related sciences; and the health and well-being not only of the workers but of the whole population as well, are dependent upon advances in medicine and sanitation; so that the value of scientific advancement to the welfare of the nation is many times greater than the cost of the necessary research; and

"WHEREAS, The increased productivity of industry resulting from scientific research is a most potent factor in the ever-increasing struggle of the workers to raise their standards of living, and the importance of this factor must steadily increase since there is a limit beyond which the average standard of living of the whole population cannot progress by the usual methods of readjustment, which limit can only be raised by research and the utilization of the results of research in industry; and

"WHEREAS, There are numerous important and pressing problems of administration and regulation now faced by federal, state and local governments, the wise solution of which depends upon scientific and technical research; and

"WHEREAS, The war has brought home to all the nations engaged in it the overwhelming importance of science and technology to national welfare, whether in war or in peace, and not only is private initiative attempting to organize far-reaching research in these fields on a national scale, but in several countries governmental participation and support of such undertakings are already active; therefore, be it

"*Resolved*, By the American Federation of Labor in convention assembled, that a broad program of scientific and technical research is of major importance to the national welfare and should be fostered in every way by the Federal Government, and that the activities of the government itself in such research should be adequately and generously supported in order that the work may be greatly strengthened and extended; and the Secretary of the Federation is instructed to transmit copies of this resolution to the President of the United States, to the President pro tempore of the Senate, and to the Speaker of the House of Representatives."

Capital also has a better appreciation of what science means than was the case but a short time ago. If capital and labor will join in the employment of science for the solution of their mutual production problems, there can be no question as to the ability of American industrial organizations to maintain and improve their place in world commerce.

Selling Production to the Management

By Harlow S. Person
Managing Director, Taylor Society,[1] New York City

THE purpose of this paper is to help the manager to a stronger realization of his responsibility for production. To raise the question of "selling" production to the management of an industrial enterprise may seem preposterous to some. Who of all agencies is responsible for production if not the management? That is a fundamental assumption of economic thinking. Who of all agencies in this period of post-war concern is urging greater production? It is the managers in industry.

Yet a fundamental economic assumption may become so commonplace as to cease to be a motivating influence, and strong urging may be accompanied by an inertia and an unwillingness to exert one's self to accomplish that which one desires. It too frequently means "Let George do it," George being, in the minds of many managers, the foremen and the workers.

It is not to be denied that the foremen and the workers have a responsibility to strive for greater production. There is evidence that they are beginning to think about it, and here and there to advocate it, but as yet not in a whole-hearted way and with constructive plans. Possibly they too are acting under fundamental assumptions; for instance, that for some reason it is not expedient to give more than enough to hold the job; possibly their demand for greater production is only a feint to cover other purposes; possibly they, too, believe in leaving it to George, he being, to them, the manager. However, the problem of "selling" production to the foremen and to the workers is not the subject of this paper.

While the accomplishment of production is obviously a joint responsibility and no party to the enterprise can leave all the responsibility entirely to the others, yet the workers are undoubtedly more nearly right than are the managers in demanding the assumption of the greater responsibility by the other, especially the responsibility for initiative, constructive plans and leadership; leadership which meets changing conditions and which takes the workers into consideration as logical and moral, if not legal partners in enterprise. For the assumption of that responsibility has always been and always will be an aspect of the function of management.

Management a Specialized Function

Management *is* primarily a *function*, not a person; and whatever person or group of persons is attached to the function of management, for the time being in an enterprise in any particular régime of industry, must assume the responsibility or be discarded. In the days of reputed pure democracy, when the tribe lifted the man of personal power upon their shields as a symbol that they conferred leadership upon him, they were recognizing the inherent need of management and were choosing a manager. In the days of household industry whenever master, journeymen and apprentices were

[1] A society to promote the science and the art of administration and of management, 29 W. 39th St., New York.

assembled in an enterprise, there attached to the master that same inherent function of management. Throughout the present régime of capitalistic industry (characterized by specialized ownership of materials and equipment, these being no longer the property of the workers or even, in many instances, of the *active* management) the management function has been magnified as a critically important function by the very complexity and delicacy of the industrial mechanism. If we should gradually emerge into a new régime of some form of industrial democracy, we shall be sure to find the management function as insistent as ever in its requirements. In fact, I believe that it will be more insistent than ever, more magnified than ever, since an industrial democracy in our present complex civilization would mean almost certainly greater complexity. The currents of influence which will keep the industrial machine in operation in that assumed future régime will be able to do so only in the measure that they find a focus in the function which we now designate by the term management. Workers may come to "manage" in a large and generic sense of the word; but they can manage in that sense only through the instrumentality of those who "manage" in a narrower and distinctive sense of the word. If and when that régime arrives the problem will be one of choosing managers and methods of management, not of choosing management.

The point to be kept clearly in mind in thinking about industrial problems requiring current action is that we are in the régime of capitalistic industry, in which managers are clearly charged with responsibility for vision and leadership, and that for all practical purposes, to us, that régime is not likely to be fundamentally changed, and the accompanying managerial responsibilities modified; or at any rate modified only towards still greater responsibilities. There is a fringe of managers who are thoroughly autocratic in mental attitude, and who would resort to extreme measures of discipline if the workers could not be content with crystallized relations and were insistent in their strivings to express a desire for change; and there is a compensating fringe of workers who demand radical changes in the social and industrial structure, and strive, some of them destructively, to achieve their ideals; but neither of these represent the great directive force in industry. They are a profound influence in making others take thought, but the actual course of step-by-step industrial development will be determined by coöperation of the moderate managers and the moderate workers, the latter asking for progressive improvement and the former desirous to assume leadership in finding the improvement that is really mutually progressive. The demand for improvement by the great body of moderate workers constitutes a challenge to management; a challenge to display vision, initiative and leadership.

PRODUCTION A PROBLEM OF PROGRESSIVE MANAGEMENT

Therefore, it should be kept clearly and forcibly in mind that the pressing problem of production is primarily a problem of management; and in times of confusion and of change more than ever a problem of the management, calling for constructive plans and leadership in winning acceptance of these plans and in giving them effect.

It is not abnormal for the average manager to meet this challenge with reluctance. It is normal for him to wish to simplify his problem and, if he has once constructed a formula for

securing production under more or less familiar conditions, to hesitate to attack the problem of working out new production formulas involving, to him, new variables. It is much easier and presents apparently less risk for him to ask that all concerned work harder individually in accordance with present formulas, and thereby secure the needed production. There is no question but that greater individual physical effort is possible and that it would secure greater production. But it is just as normal and reasonable for the individual worker to meet that challenge with greater reluctance than the manager meets the other challenge, especially if the individual believes that the problem can be met by better management. He feels that it is the function of management not to work out a *status quo* in production methods but to strive for increasingly efficient methods—increasingly efficient because of better coördinations and not because of greater individual exertion. The war proved that in extraordinary emergency the individual will give himself to the limit, and proved that that method does secure production; but it proved also that only extraordinary emergency will inspire to such effort. The individual worker now believes that the extraordinary situation is past and that it is up to managers to secure the same results. He believes that it is a function of management to so coördinate the elements and to so manage that he will inspire in each individual an unconscious impulse to a maximum effort (consistent with well-being) which he cannot resist. He insists that to have visions, try experiments and to assume risks is a phase of the function known as management. Is it not, after all, the easier solution of the problem for the manager to *will* intellectual effort on his part to construct better production formulas, than for him to attempt to drive the mass to greater individual effort, or to modify the behavioristic psychology of a crowd which charges him with responsibility?

It is futile for him, in the hope of solving his production problem, to resort to the strategy of waiting for hard times and unemployment and the greater voluntary effort of the workers resulting from the competition to hold jobs. The manager who looks forward to hard times to solve his problem may have visions of a selected force steadily at work at reasonable wages, and that problem at least (apparently) solved; but he fails to include in his vision decreased consumption, decreased demand for his product, competitive selling prices, production on a falling market and all that accompanies hard times. For each problem apparently solved in that way, several take its place. Moreover, as in the cycle of industrial affairs good times again appear, the old problem of production is sure to become dominant and with aspects more embarrassing with each recurrence. The manager may as well appreciate that management is a continuing function and assume his responsibility as manager once and for all, for good times and for bad times; he may as well recognize that there exists a challenge to his vision and his leadership in developing new formulas for securing production.

Production will not be secured by coercion of individual workers; it will be secured by managerial leadership, which, utilizing all available resources in executive, foreman and worker, develops and makes available such excellence of production technique, and displays such fairness in sharing the product of joint effort, as to inspire in each individual the desire to apply himself to the reasonable limit in the utilization of that technique.

TYPES OF UNPROGRESSIVE MANAGERS

During a period of more than fifteen years I have had occasion to talk with many managers concerning the problem of production; during the past two years it has been a frequent occurrence. It has been an inspiration, for their minds have been keen, their ideals high and their desires sincere. Nevertheless, I have sensed, in too many instances, behind an attitude of positive opinion, a feeling of wonder and of helplessness as development of the production problem has presented new phases.

There is the plant manager of the large corporation dominated by absentee ownership. He finds himself between conflicting influences; he has all the production problems of the owner-manager of the independent plant on the one hand and, on the other, the problem of conformity to general business policies of absentee directors and executives. They represent the ownership of the plant and direct its use to their "larger" purposes, and those purposes frequently do not permit the development of socially serviceable and, in many instances, technically profitable production policies. He may have the ideal of the true manager—that profits are a reward for adding to the world's supply of useful goods and services, and may desire to develop his production policy along lines which express his ideal, but they may govern with the ideal that profits are a reward for taking clever advantage of price changes or of changes of supposed value of properties, in many instances the result of manipulation. He may recognize that the production factors which he coördinates are dynamic and changing, and that these changes must be met by flexible policies and methods; they may assume them as static, capitalize them as static and place him in the position of having to adopt production policies to sustain a capitalization which assumes them as static. He may believe in a sustained production at a lower selling price; they, in price maintenance, discharge of the superfluous working force and idle equipment; he may believe in the favorable influence on production of high rates of pay; they, in the doctrine of the living wage; he, knowing his people, may believe in collective negotiation, while to them that may be anathema. He may believe in an increased management overhead as under certain conditions highly productive; they may give orders to cut overhead to the minimum. Their decisions may be governed by a purpose which holds pecuniary profits to be the primary objective, with social service and the interests of the people engaged in the enterprise as incidental; he may have the ideal that production is primarily a social service with profits as an incidental reward for the excellence of the service. It is not a matter for surprise that while such a manager, under such restrictions, may join the chorus urging greater production, he, at the same time, wonders what part he may be able to play in securing it.

On the other hand, there is the class of owner-managers or of managers for owners who are resident and have a supervisory relation to the active managers. Of these the difficulties and their reactions to the difficulties are various. In some instances they too are struggling under the limitations imposed by an assumption of the point of view of "big business," but, on the whole they are striving earnestly, for production and subscribe to the doctrine of social service even though they may not succeed in making good on such subscription. Their difficulties arise primarily from conditions in the plant which have been inherited or from inherited traditions within themselves. It should be noted, in contrast,

that while absentee ownership may impose upon its resident managers limitations from without the plant, it is likely to afford them freedom in scrapping traditions within the plant; on the other hand, while the manager of the smaller plant may be free from limitations from without, he is likely to be loaded with traditions which have developed within the plant and are dear to those who have grown up with them and especially to the supervising owner.

Among them is the self-complacent manager, an executive well along in years who has grown up with the plant. He has the record of successful achievement in other days and values highly the mental attitude and the methods which were at the basis of the success of earlier years in the same, then a smaller plant; to him the success of the past is guarantee of success in the future; to him current troubles are caused by incompetent public executives, irrational legislation, incompetent available assistants, slacking workers, organized labor and similar influences, which he deludes himself into believing transitory, outside himself and his methods. He is reluctant to accept new ideas and new methods; sometimes he is absolutely impervious to them. He does not appreciate that he lives in a changing industrial society and that his ideals and his methods, and his plant as an expression of these must adapt themselves to ever changing circumstances.

There is also among them the manager who is the "my-business-is-different" type of executive. He, too, is likely to be an older man who has grown up with the business. He may be interested in the development of better management methods *in the abstract;* he may attend meetings of efficiency societies and subscribe to *Industrial Management* and *Factory;* but his temperament is such that he emphasizes the uniqueness of the materials which he treats rather than the universality of managerial principles and methods which may be made available in the productive treatment of all materials. He remains untouched by the newer technique which is making possible greater production.

Again, there is what may be called the detail executive—the executive whose temperament makes him like to do things, to have a hand in everything which goes on in the plant, who likes to have every question, no matter how minute, referred to him for decision and who likes to have everything come over his desk. He is not a coördinator. He represents the opposite of the exception principle. He wants detailed figures and shuns summarizing graphs; he shuns forms and insists on verbal instructions. In the course of time he is wound up in the threads of his many detailed interests and finds himself firmly bound to outworn methods and ineffective because of them.

There are many managers who are composites of these types; and undoubtedly many who constitute different and equally ineffective types.

It is at managers of these types, whose number gives them great influence in the aggregate, that the challenge for production and for greater production is thrown by the circumstances of our industrial development. It is to them that the ideal of production and the methods that secure production must be sold, and they must will to buy. The moral responsibility is theirs.

LINES OF ACTION FOR PROGRESSIVE MANAGEMENT

Assuming that management is sold to the idea of its responsibility for the quality and volume of production, and

that it buys with a fervor which inspires to action, what are the lines of action? So far as we can see they are three: the adoption of sound administrative policies; the development of technically superior production methods; and the establishment of wholesome relations with the workers. The three lines of action are so interrelated that they must be followed together.

By sound administrative policies I mean those governing policies which embody the "constitution" under which the business is conducted, different from, superior to and controlling detailed policies of operation. They are the decisions of the directors and of the president or general manager in a capacity representative of the directors. In the determination of administrative policies there should be taken a long look ahead—a broad look around on the industry to which the business belongs, and a still broader look about upon industrial society which the business serves. Not only in these policies are defined the purpose and limitations of the business but in them are expressed the ideals of the business as well. What shall be produced; in what quantities; for what price? How shall quantity and price be adjusted to changing markets? What shall be the methods of production, of selling, of competition? What shall be the policy with respect to periods of depression, idleness of equipment, unemployment of workers? What shall be the attitude towards workers, working conditions, wage demands, desire for collective negotiation, desire for opportunity for self-expression in helping to determine administrative and managerial policies and methods? What shall be the relation of the business to trade associations, the community, government, industrial society? What is the social purpose of the business and how shall individual purposes be adjusted to it? These and others are the questions to which answers should be found in the principles expressed in the governing administrative decisions. The formation of these principles is vital to successful management, for in them are found the *ultimate* standards of achievement for the management. Their existence promotes good management and effective production. It is the duty of management to assist in the establishment of such governing principles by providing mechanisms of investigation and research as competent as the size of the business can afford.

Given the defined purpose and governing policies of the business, the problem of the detail management becomes one of establishing working policies to give them effect and production methods to give these working policies effect. The establishment of standards of operation is essential—*intermediate* standards, so to speak, as distinguished from the ultimate standards mentioned above, standards of the object and the excellence of production technique. These standards of methods must be derived from the widest observations in industry, from minute scientific analysis of the production processes and from experiment. They must be made under competent, specialized supervision, and they must be a matter of development and not of imitation or of installation; and as their development proceeds traditional working policies and methods which cannot stand the test of cold analysis and of trial must be discarded. Once established, and systems of automatic control to insure their maintenance developed, increased production per unit of effort follows with astonishing rapidity.

The establishment of sound industrial relations is something bigger than employment management, in the sense

in which the latter term has been ordinarily used. The manager who defines his labor problem in terms of scientific selection, personnel records, centralized hiring and discharge, "welfare work," and reduced labor turnover only, has not yet grasped the real significance of the development of the labor problem during the past three or four years. Labor can no longer be regarded as a commodity, and the restricted view of the function of the employment manager belongs to the period when the commodity theory prevailed. The routine functions of the older employment manager will survive, but only as routine functions directed by a newer and larger conception of the relations of employer and worker. The successful, that is the productive management of the future must conceive the worker, as President Hopkins puts it, "not as the working man but as the man working"; as an individual with technical knowledge to be utilized, instincts for self-expression to be given expression, intellect to be given the opportunity for development, interest in the purposes, policies and methods of production to be regarded, ideals with respect to his and his family's future to be cherished, and power in collective action to be respected. The manager whose administrative and managerial policies include a regard for these characteristics of the twentieth century man working, and whose leadership inspires the utilization of all of them in his business, will thereby have taken a step which will multiply the effectiveness of the best technique.

The inspired manager who accepts the challenge that on him rests the responsibility for production and for ever greater production, will surely lead along these three lines: the adoption of sound administrative policies; the development of technically superior productive methods; the establishment of just relations with the workers. His procedure must represent a rational combination of hard-headed practicality and sane idealism. He must work with his feet planted squarely on the ground and his eyes up and looking forward. The ground must be well within his range of vision lest he stumble and fall; but his vision must not be centered there lest he lose his way, and his feet must not be too rigidly planted on the ground. As Christopher Morley has said, the man who gets anywhere usually succeeds in doing so by having first one and then the other foot in the air.

Labor's Attitude Toward Methods of Management

By John P. Frey
Editor, *International Molders' Journal*

THERE is one subject upon which little difference of opinion exists today. The world stands in urgent need of greater production. Statesmen, economists, manufacturers, financiers and trade-unionists are all agreed that the enormous waste caused by the war and the crushing burden of national indebtedness which followed can only be overcome by production—the creation of sufficient wealth to liquidate the debts of the world, and to give greater comforts and opportunities to the mass of the people than they have enjoyed before.

Management and Labor in Production

In its broadest aspect, production depends upon several factors, which include in their number, demand, credit, raw material, labor and transportation. For the present purpose the problem is being considered solely in the field of management and labor. Here we find that, while there is unanimity of opinion as to the necessity for better production, there is but little agreement upon the methods which must be adopted to develop the greatest degree of production with the greatest benefit to industry and the community.

It is not a particularly difficult task to state the formula for production. The problem lies in applying it in a practical manner. The basis for successful production is coöperation between management and labor and successful coöperation is based upon confidence between those who are to coöperate. But how is this confidence to be established?

Successful production requires that there shall be method, system and discipline. With this conception there will be no valid objection. The vital question which arises is the authority which is to select and determine upon the method or system, and apply or supervise the discipline.

If management is to assume the sole right to determine what system is to be applied to secure better production and what rules, regulations and discipline are necessary to make it effective, no profound knowledge of human nature is required to realize that labor, under such circumstances, cannot give its fullest coöperation.

Systems and rules for production can only work successfully where there is coöperation and the right mental attitude, and these cannot be created unless those, who are to participate jointly in production, jointly agree upon the conditions under which it will be carried on.

Is it possible to establish a condition where confidence will exist between management and labor unless these two important parties to production have become acquainted with each other, and with the problems which affect both and, in addition, have jointly worked out the rules and regulations under which coöperation is to be carried on?

Industry in America has not been carried on as economically and as effectively as it might have been, one prominent reason being the lack of confidence which has existed on the part of management toward labor and on the part of labor toward manage-

ment. Management, at times, has apparently believed that satisfactory production depended wholly upon rules, methods and systems worked out and applied by management alone.

Labor has been made to feel, on more than one occasion, that its sole function was to obey orders, and frequently to obey them blindly, and, where this condition has existed, it has unquestionably created an attitude on the workers' part where they had but little interest in production and none of the spirit of coöperation which is so essential.

For a number of years previous to the war able men, animated by most worthy motives, endeavored to devise methods and systems which, if applied to industry, would establish greater production. But these systems, regardless of their individual merits, largely failed to solve the problem. Under their operation labor, as a whole, became more dissatisfied and less willing to coöperate. Production was something which was forced, instead of something which came as a result of good will and a spirit of confidence and coöperation.

The American trade-union movement believes in progress. It is the only hope for the future. It recognizes that progress means change and readjustment, and it has no objection to changes, but American labor may have serious objections to the method by which changes are made.

Labor has objected in the past and will object in the future, whenever it believes that it is being experimented upon and experimented with by others, without having a voice as to the necessity, the value, or the character of the experiments taking place during a period of change. Labor feels fully justified in this position, for, from the mass of industrial experiments in which the human factor plays a prominent part, we find that the majority have resulted in failure. It must be recognized that there is a distinct difference between experiments with material and experiments with human beings.

If labor has realized that production was necessary to the creation of wealth, and wealth was necessary if higher wages and other improved terms of employment were to be secured, why is it that labor frequently indicated a frank unwillingness to coöperate with management when new methods or systems of production were applied?

LABOR'S ATTITUDE TOWARD PRODUCTION SYSTEMS

One prominent reason for labor's position is not difficult to discover. Labor was suspicious of these systems; suspicious because it had not been consulted, and had had no part in preparing them; suspicious because they were, unfortunately, frequently advertised as methods by which skilled labor could be supplanted by unskilled labor; suspicious because it was claimed that scientific methods had been worked out which enabled management, and management solely, to determine what degree of exertion, what amount of production labor should produce within a given time; suspicious because in practice these systems were largely applied by men having little, if any, practical personal experience as manual or skilled workmen; suspicious because the mathematician and the mechanical engineer were held to be the only ones competent to determine the methods, processes and the amount of energy which the workman should put into the day's work.

Facts are facts, and no good can come from sidestepping them, or glossing them over.

Labor, before the war, rose in

opposition to the several systems of production which had been loosely called "scientific management." As labor was directly affected, it was interested in time studies, in the subdivision of labor and the basis of computation for the payment of wages. For a number of years there existed an active controversy between those who advocated so-called scientific management and the trade-unionists. As a result of an investigation made under the authority of the Industrial Relations Commission, it was made evident that the term "scientific management," applied to these systems, was an unfortunate one because none of them had reached that stage where the term "scientific" was appropriate.

The internal evidence, contained in the investigating commission's report, satisfactorily disposed of the contention that time studies of labor could be made with scientific accuracy; they disclosed that the human element was a factor which could not be reduced to scientific accuracy by the use of the stop-watch, or any other methods, for men differ in their mentality, their vitality, their nervous reaction, the time required to recover from fatigue as well as in a number of other qualities.

Sometime after the report on scientific management and labor, above referred to, had been published, one of the production engineers in the scientific management group, in a communication to the writer, said in substance: "I will admit that you have proved the unscientific character of much that has been termed 'scientific management' and that no one can successfully claim today that time studies of labor can be made which are scientifically acurate. You have killed these claims and you may kill others, but the soul of efficiency cannot be killed. Certain fundamental truths which were worked out by efficiency engineers will live regardless of how incumbered they may have been by false claims, and by the pretentions of those who saw in the new conceptions of production an opportunity of exploitation for personal ends."

An unprejudiced examination of what has been done by the efficiency or production engineers bears out the basic truth contained in the statement that the soul of efficiency cannot be killed. Unquestionably, there was much in scientific management which was sound, for, if labor could be charged with inefficiency at times, in many instances management in American industries could be charged with a much greater volume, as well as the burden of responsibility. In fact, those who have studied the methods or lack of methods of management which existed a number of years ago are frequently surprised that it was possible to have kept the sheriff from the door, under the cumbersome, inadequate and unintelligent system of production which existed in many plants.

In company with Professor Robert F. Hoxie and Mr. Robert G. Valentine, the other members of the commission, the writer investigated a large eastern manufacturing plant. A "scientific management" engineer had installed his system in the plant after some two years' work and a cost to the firm of approximately $40,000. The installer of the system had been more competent as a mathematician and a mechanical engineer than as a psychologist or economist; he had apparently known little about human nature. Owing to the fatal defects which had developed in the system which he had installed, it had been eliminated from the plant, root and branch. However, the president of the corporation stated that it was the most profitable $40,000 he had ever spent, because it had given him an opportunity of studying production

in his plant from a viewpoint which he had never grasped before, and had enabled him to install methods of production far more satisfactory and successful than those he had originally worked out.

DIFFICULTIES OF PRODUCTION SYSTEMS

For a period before the war, there was little in the direction of production in many plants which brought the higher management into direct contact with labor. Wasteful methods, with which the workmen were familiar, were not called to the management's attention because the management believed that it was fully equipped and all-sufficient to direct production, and there was, to quite an extent, the same measure of coöperation between management and labor which existed between the Czar of Russia and many of his subjects—there was compulsory regulation in the place of a spirit of loyalty and coöperation.

When systems for the regulation and stimulation of production were first applied, too much confidence apparently was placed in the system and not enough consideration given to the human factors which were involved, and the systems were frequently accompanied by the promise, the understanding, or the belief that their introduction and application would prevent labor troubles and establish a condition under which trade-unionism could not function successfully.

If a system applied in one plant could be shown by charts and statistics to have accomplished remarkable results in increasing production and reducing labor costs, this in itself was no proof that when applied in other plants it would produce similar results. Methods of soil cultivation on the rich plains of the central west would not work efficiently on the rocky, uneven but fertile soil of the New England states. Methods of directing coolie labor in Asia, no matter how successful there, in all likelihood could not be satisfactorily applied in America to American workmen.

Among those who, a few years ago, were endeavoring to work out the problem, were engineers who saw the problem almost wholly from the position which they occupied, and who had failed to sufficiently examine or understand it from the view point of those occupying different positions. Some, with the stark enthusiasm of theorists, devised methods and systems which they applied with as much fervor as crusaders, but with as little sound judgment as the hydropaths who, finding that certain applications of humidity or water to the human body produced beneficial results in certain cases, conceived the idea that all of the ills to which the human flesh is heir could be speedily cured by wet packs.

The facts are more valuable than illustrations or theories. The outstanding fact is that the various systems of production, so widely advertised and discussed a few years ago, failed to bring about that quality and quantity of production which should be the ideal of both management and labor. They failed to establish mutual confidence and, because of this, failed to create a condition of healthful cooperation between management and labor.

While some efficiency engineers were claiming that highly skilled labor was no longer required, because, through systems of production and subdivision of the work, it was no longer necessary to employ the old-fashioned craftsman, other men believed that one of the handicaps to successful production was the lack of craft and manual knowledge on the part of many workers. Commendable efforts were, and are still being made through trade

schools, vestibule schools and other methods to build up the craft, manual and technical knowledge of the workers so that there might be a general improvement in mechanical knowledge on the workmen's part.

Unfortunately, some of the early trade schools were subsidized by employers' associations who had more than one motive in mind in maintaining these institutions, and others were controlled by men whose motives and ambitions outran their practical knowledge of what was essential. And here again there was but slight coöperation between the mass of the workers who were to be benefited and those who were to confer the benefits, the latter feeling themselves amply qualified to direct and advise, but little inclined to accept suggestions or work jointly with the workers and their representatives.

UPON WHAT DOES SATSIFACTORY PRODUCTION DEPEND?

Improved production depends upon a continual increasing development of mechanical knowledge and skill on the workman's part; it depends upon system, for, unless there is system, there cannot be efficiency. But it depends more than anything else upon coöperation which in turn depends upon mutual confidence. The great problem of production is, first of all, the establishing of mutual confidence.

How is this to be established?

It cannot be established if one of the parties to production considers himself superior to the other, or relies upon its strength of numbers or of position. It cannot be established if one of the parties lays down the rules which are to govern the other. No man or group of men are so wise and gifted with so much natural ability that they are competent to prepare and enforce the rules which are to govern others. At the very best, they can but adopt the rules under which they themselves are to be governed.

Management, consulting with itself, is not competent to work out the most successful methods of production; labor consulting with itself is no more competent, for production is a joint product, it is the result of coöperation between a number of men occupying different positions and responsibilities. The most competent managers, operating with a most competent staff of subordinates, are no more competent to work out the complicated human problem which plays so important a part in production than the trade unions would be to work out this problem without conferences with management and an examination of the factors which must be understood and which must be recognized if production is to be successful.

The trade-union movement has no patented system for solving the problem of production. It places abiding faith in no system, because man-made systems must of necessity have their defects and shortcomings, and systems devised wholly by management may have and frequently do have ulterior purposes which do not show themselves upon the surface. But the American trade-union movement has unlimited confidence in methods and principles, and it is through the application of these that it sees the most effective solution of the problem. The American trade-union movement is fully aware of the fact that wages depend upon production and that wages are drawn not from the wealth which may have been accumulated in the past, but from the production of today and tomorrow.

Labor is fully aware of the fact that the comforts of life and the opportunities for better things in the future depend upon a satisfactory volume of production. It bases its hope upon the

building up instead of the tearing down of industry. But labor is quite convinced, as a result of its experiences, that satisfactory production cannot exist unless there is coöperation, and the principles and the methods which it believes to be essential to establish this are those which underlie the institutions of our common country —the principles and the methods of democracy.

The citizens of the United States are loyal and they coöperate to as great, if not a greater degree than the citizens of any other country, and this is because there is a form of government in the United States under which government exists only with the consent of the governed. These principles and the methods are as sound in industry as they are in civil affairs.

In these days, with the conceptions and ideals which have so firmly fixed themselves in men's minds, the principle of autocracy or arbitrary power no longer enjoys the approval of the majority. The problem of satisfactory production hinges largely upon whether industry is to be group-governed or self-governed, and if it is to be self-governed, it is essential that management and labor should consult together and jointly work out the rules and the conditions under which labor is to perform its part and management is to function.

Control of industry by management, without coöperation and consultation with labor, is as impractical today as would be the effort of group government for the people without their consent.

Shop Control as a Manager Sees It

By Hudson W. Reed

Production Manager, Henry Sonneborn & Co., Inc., Clothing Manufacturers, Baltimore, Md.

THE policy of a production manager is frequently held in suspicion by labor, labor feeling that any policy adopted by a production manager will necessarily favor the immediate interests of the owners of the business and therefore be detrimental to labor. This suspicion is the natural outgrowth of a tradition handed down by generations of workers who have uniformly acted on the theory that any move beneficial to the owner must necessarily be against labor's best interests.

Labor, especially union labor, should realize that recent changes in industry have affected the attitude and viewpoint of the management as well as that of the individual worker. Today with management and organized labor more nearly on a par, as far as bargaining strength is concerned, the industrial welfare of the workers, both individually and collectively, is tied absolutely with that of the effectiveness of the management.

Every concern dealing with organized union labor assumes the responsibility not only of maintaining a successful business but also of safeguarding the position of its workers in every possible way. A production manager in carrying out the general policy of the firm must, if successful, treat his position as an impersonal and impartial one, knowing that his success depends upon satisfactory material benefits to be derived by both sides.

With this intention always in the foreground and for the purpose of centering the thought of organized labor on the problems confronting a production manager, whose motives will be more or less open to question by individual members of union organizations, this article is written. Therefore this discussion of shop control applies to those plants wherein the workers are organized to such an extent that production is affected not only by the policy of the union as a whole but also by the acts of the individual workers who are protected by the union.

The term "production" is so generally misused both by the management and the workers that a clear understanding of the meaning of the term should be reached before the subject of shop control is further discussed. From a production manager's viewpoint, "production" should mean (a) maximum output tempered with a degree of quality that will satisfy the trade and meet competition, together with (b) factory conditions that provide for the physical well-being of the workers.

Such matters as health benefits, old-age pensions, seasonal employment or non-employment, and the care of employes who are below normal in strength or intelligence are altogether essential problems that must be provided for either through national or state legislation, special agreement between the unions and the employers or by the unions themselves. It is in the interest of society that such questions should be handled. They should not be considered as among the essential or inherent factors of production or as irremediable deterrents to production.

Production depends entirely upon

the conception and application of scientific manufacturing methods and is seriously handicapped by coupling it with social welfare considerations which, while vitally essential to the worker, are not an integral part of production.

Hours of work, wages, sanitation, labor-saving devices and similar working conditions are debatable, but to operate any individual plant in the most efficient manner, certain essentials to shop control must ultimately be left largely in the hands of the management by organized workers. These essentials are:

Selection of competent help.
Transferring of workers.
Use of temporary help.
Discipline.
Conception and application of production methods.
The setting of standards of output.
Quality.

In all this we assume a reasonable unity of purpose and sympathy as between the management and the workers. We also assume the progressive development of a considerable measure of real collective authority on the part of the workers. As the workers learn how to assume collective responsibility this will be made possible. In so far as a basis of reasonable confidence is not afforded, the workers must necessarily protect themselves in such wise as they find possible.

SELECTION OF HELP

Today, too frequently, the chief requisite from a union standpoint for the qualification of a worker is a union card, and for those shops that are required to call upon union headquarters for their supply of workers this is a serious handicap. The possession of a union card does not mean that the applicant for the position open can qualify for it, because union members are not always selected on account of their knowledge or qualification for the crafts they follow.

The early history of union organization showed an inclination not to take into a craft-union any workers except skilled ones. "Unionism" at one time stood out for the protection of the crafts against incompetent workers and the skill of the worker had to be vouched for by members of the union before the applicant was given a working card.

Mass organization changed the policy of craft protection to one of protection to all workers affiliated with the craft and with the advent of the idea of "one big union" the requirements of apprenticeship and craft skill were almost completely disregarded, the result being an influx of workers into the craft organizations that were entirely unfitted to be called skillful.

The writer is not criticizing this change of policy, but is calling attention to it merely to give one reason why the unions should not unduly insist on the employment of those members who are out of work if they are not qualified to properly fill the vacancy, either from a technical or production standpoint.

Granting that in carrying out an idea somewhat analagous to the "one big union" it was necessary to take into the labor organization all the workers affiliated with the industry, once a particular industry is organized, more care can be given when taking in new members. Union organizations have reached the point of development where certain reforms appear to be necessary to prevent them from either growing stale or becoming unwieldy and any reform that affects the qualification of a worker does not need to be retroactive so as to make it affect a member who now holds a union card.

The qualifications of each worker should be taken into account when wages are set and the prime factor in organizing an industry, from the worker's standpoint, should be to place their members in jobs which they are reasonably competent to perform satisfactorily. Any other course will fill up a shop with workers whose delinquencies will in the end prevent operating the plant successfully.

Production should interest the union as vitally as the management because output must eventually govern real wages, and the unions must be as much interested as any group in the community in placing their members in positions which they are best qualified to fill so as to secure maximum output. In the end output must be the basis for increased wages or shorter hours.

Physical and mental competency must be considered in the employment not only to insure production and shop discipline but also to preserve the health and morale of the workers already employed. The selection of workers must be left entirely in the hands of the management for, with the present trend of management toward the maintainance of intelligent employment bureaus, great assistance can be given the unions in solving the problems inherent in mass organization. In the long run it would be to the interest of the union to remove any of the obstacles in the way of employment bureaus so as to enable them to properly choose and place new workers.

TRANSFERRING WORKERS

Flexibility is an essential quality of shop control. The transferring of workers is necessary in order to insure the balancing of operations and to prevent carrying an excessive amount of work in process. The transferring of workers to operations that they are not familiar with is usually in itself a losing proposition to the management, but is necessary at times not only from a production standpoint, but also to insure continuous work for the entire shop. The unions, to carry out the principles of production which they have adopted, should not only refrain from interfering with such transfers, but should coöperate with the management in insisting on a fixed production from those transferred, based on the known ability of the workers so transferred.

The policy of the union regarding the transferring of workers must be broad enough to extend past the point of erecting the necessary safeguards required to protect the wages of the workers when temporarily transferred. The union must insist on the maximum output of which each transferred worker is capable, based on the worker's knowledge of the operation and, when necessary, must encourage the management in making permanent transfers to balance production so as to avoid the employment of unnecessary help.

A stabilized and predetermined output can only be secured by having the machinery for transferring workers reasonably flexible, as the union is chiefly interested in obtaining steady employment. Even though it may be necessary at times to reduce the wages on permanently transferred employes, it may still be a desirable policy because steady employment may mean a large increment to the entire personnel in real wages.

TEMPORARY HELP

Action has lately been taken by some unions to prevent manufacturing concerns taking on any temporary help. Under this policy industry would remain at a standstill, unable to take advantage of seasonal or excess business. This policy, fortunately, is only

in its infancy and, if promptly repudiated by the unions, will prevent serious trouble in a large number of shops, because every manufacturing concern that is compelled to vary its product requires, at times, either temporary or seasonal help. The life of any manufacturing organization depends upon its flexibility and to be frequently denied additional help, unless such help is considered permanent and unless the entire number of operators in a particular section or craft are guaranteed the same number of hours of employment as all other classes of workers, is a handicap so great that few manufacturers would be tempted to take advantage of any new opportunity that might arise. The only alternative the manufacturer has is overtime which, with wages at their present peak, is apt to be prohibitive and at all times undesirable.

DISCIPLINE

The success of any organization whether it be union, military, fraternal or industrial, depends as much on discipline as on any other single factor.

The more powerful the union organization becomes, the stronger the natural tendency grows to take the position that "the worker can do no wrong." This has resulted today in the local shop organization at times defending its members not only on substantial charges of bad work, loss of time that interferes with production and incompetency, but also on occasions when clearly guilty of theft, brutality, rowdyism and obscene actions.

The greatest danger confronting any organization is not its weakness but its strength. This fact has been clearly demonstrated in the present decade by the various changes in governments that have been established for centuries and by the loss of shop control by reactionary executives who exercised their power to exploit their employes beyond human endurance.

Will the union organizations which are now at the height of their strength make the same mistake, or will they temper their strength by insisting on shop discipline? It should be clearly understood that protecting members when they are clearly in the wrong and thereby causing a feeling that "might is right" will not only lead to industrial chaos, but will also establish a condition among the workers which will effectually destroy any chance of success in the movement for the taking over of any industry by the workers.

Granting that, in the past, injustice was often done to the workers by some shop managements under the guise of discipline, the necessity for discipline still remains. Dicipline within the union is recognized both by the labor organizations as a whole, and by the individual members thereof, and the union should enforce shop discipline with the same spirit it shows in enforcing discipline on its members in strictly union matters. "Sovietism" in Russia, if it is successful, will owe more to a rigid discipline than to the collective intelligence of the masses or to its individual leaders.

In speaking of discipline, reference is not made to the humiliating restrictions that have been forced on the workers in some plants in the past simply because the management was in a position to use the iron hand, but to general law and order in the shop such as prompt attendance, business courtesy, good workmanship, temporary inconvenience where the welfare of both the workers and the firm is at stake, observation of sanitary rules and regulations and fulfillment of obligations agreed upon. This is a matter that can well be handled within

the union organizations and the excuse so constantly given by the union leaders that "it is difficult to control so many workers in the organization wherein each worker has an equal voice," while plausible, is not reassuring as self-control is necessary to avoid chaos. The more power exercised by organizations of workers in the management means a corresponding amount of responsibility to be assumed, not the least of which is enforcement of discipline among their members where discipline means progress to the workers as a whole.

CONCEPTION AND APPLICATION OF PRODUCTION METHODS

Under the existing plan of industrial government, conception of production methods is clearly and admittedly a managerial function and the benefits derived by conception without the power of application are nil. Granting that the application of the conceived methods must be applied in a manner that will work no appreciable injustice to the worker, the fact remains that application is so closely coupled with conception that interference from the union may seriously impair the success of the most scientific plans of production.

It will be necessary for the union to distinguish between (a) the end sought to be accomplished in the interest of heightened production and (b) the safeguards intended to guard against abuse. Too frequently restrictive regulations are so onerous and unnecessary that they nullify the good which it was sought to accomplish in the first instance.

A well-formulated plan of production can easily be nullified by unnecessary restrictions. Plans requiring months of work have been abandoned because restrictions placed upon them by the union would have prevented their success.

The unions today are not in a position to be dictatorial in passing on the application of production methods. The shop chairman or the leader of a section of workers fearful of the result of some contemplated productive methods may easily wreck a season's output by blocking the well-made plans of the management.

The average shop chairman or committee is not far enough advanced in the science of the management of industry to pass well-rounded judgments on production plans, and in the leader's efforts to lean over backwards in protecting the workers, output has frequently suffered unnecessarily, which in turn is reflected upon the workers' steady employment.

There can never be a dual leadership on the conception and application of production methods. The leadership must either be assumed by the management or by the workers and in either case the responsibility must be assumed by the side of those assuming the leadership.

The unions are not at present in a position to assume this responsibility and therefore should confine their activities toward control of the plan of organization rather than attempt to interfere with the functioning of the management and administrative organization whether it be at the machine or in the office.

SETTING OF STANDARDS

The fact that mass organization has created a dangerous condition for production cannot be questioned by the most rabid unionists. With the organization of the entire personnel of all shops of any industry, the question arises as to the type of workers on which the standard of individual production should be based.

Appreciating the fact that under the present conditions the unions have a problem to solve in taking care of the inefficient workers in their organization, the question is raised as to whether the output of the essential commodities of life is to be curtailed to the point where scarcity of merchandise will make the price prohibitive, by the union insisting that the standard of a day's work be so set that the output of all its members must be curtailed to that which can be produced by its least efficient worker.

Analysis of shop production in some of our industries will show that production as a whole has already been reduced to a dangerous point through following this policy. In the long run the curtailment to the capacity of the less efficient workers must lead directly to industrial disaster.

Mass organization has brought about this condition and the local organizations must help to solve the problem thus created. During the process of solving it must permit the management to base its standards of production at least on the average worker. Any other course will create a condition that may effectually bar the further advancement of the union in having a greater voice in the running of industry.

Perhaps the greatest economic loss to the world incident to the current disorganization in industry is the lowering of the power of the individual to work his full or normal capacity. The present restrictions put on maximum output by some labor organizations to protect the weakest and slowest of their number is creating a condition that has already become dangerous.

These restrictions tend to lower the morale of the worker as a whole and create discontent by enforced idleness during working hours. The future progress of the world and even the maintenance of the present standards of life depend upon hard work. "Soldiering" and legalized "sabotage" on production will not produce the necessities of life, much less the luxuries so much desired by everyone. Due to incomplete organization in some branches of industry and the lack of organization in others, the organized worker has maintained his present standard of living, but the law of averages must soon prevail again and it will be well for the labor organizations to foresee the rapidly approaching conditions when it will be necessary to produce merchandise in sufficient quantities to meet their needs. Increased wages alone are not wealth. The wealth of the country depends on the availability of the commodities and luxuries of life.

QUALITY OF WORKMANSHIP

Of the various standards necessary for every manufacturing plant to maintain to meet competitors and to retain the good-will of the buying public, quality of workmanship is undoubtedly the most difficult to maintain.

Quality of workmanship even on materials that can be measured by fixed standards is difficult to maintain but on merchandise where quality of workmanship means finish, style, shape or form, measurements of which can be judged merely by feeling or general appearance, the difficulty of maintaining quality is increased immeasurably.

Each manufacturing concern must choose the field in which it will compete with its manufactured merchandise. This choice is not separate and distinct from its selling and advertising policies. Around its standards of quality practically the entire policy of the concern is constructed. Wages, hours and other working conditions may be subject to negotiations between the employer and the employes, but any

restriction placed on quality by organized labor is extremely dangerous, if not fatal, to the existence of any firm. This applies either to temporary poor workmanship or to permanent restrictions.

A temporary failure in production may be overcome at a later period, wages and hours adjusted and the price made to suit the new conditions, but poor quality of workmanship means either a dissatisfied customer—if the work is sent out—or an unnecessarily increased cost of manufacturing if the fault is remedied. In either case it means irreparable damage.

Organized labor—both as organizations and as individuals—is in some plants attempting to influence quality standards, forgetting for the moment that in doing so they are courting short-time for these plants, as quality of workmanship is demanded by the buying public today and it is sales that create steady employment.

ORGANIZED LABOR'S NEW FOUND STRENGTH

With organized labor growing constantly stronger, the problem confronting the labor leaders has changed to a considerable extent. Whereas in the past they had to struggle to maintain their strength they are now confronted with the problem of how to use to the best advantage the strength of their organizations to further the interests of industry so as to permanently maintain the improved conditions.

The one great danger lies in attempting to use their strength either to gain temporary advantages through improper reductions in the working hours and increasing their pay to the extent of stagnating industry, or in attempting to take over certain managerial functions from the management at a time when they are neither prepared to assume such duties nor to shoulder the responsibility if failure should result.

Of the two evils the latter one would, in my opinion, prove the most disastrous. It may easily develop into confiscation, a condition that will bring forth a far more bitter battle between labor and management than was caused by such matters as unionism, hours of work and increased wages.

It is suggested that the best way for organized labor to use its new found strength is in improving general working conditions, in the abolition of child labor, in preventing unemployment, in securing sick and accident insurance and similar material benefits. At the same time labor can use the solidarity of its organization as the basis of furthering safe and sane management, enforcing shop discipline, encouraging increased production and backing the management in general shop control.

Using the acknowledged strength of organized labor to promote shop bickering, for blocking routine shop management or for legalized "sabotage" in hampering production, will be taking a short cut to industrial warfare, a condition that neither side desires.

Past differences must be forgotten and a mutual trust and confidence established if organized labor is to take the position due it in the field of industry.

Labor's Interest in Administration

By Major General William Crozier
U. S. A., Retired; Late Chief of Ordnance

SINCE the Declaration of Independence announced that all men are possessed of certain inalienable rights such progress has been made in the consideration which is accorded to men in the mass, to "the people" as such, in all matters in which they have a real interest, as to establish the acceptance of the process as embodying a sound principle in human relations. In political matters the consideration has gone beyond the point of greatest safety for an established state, for a government of the people, by the people and for the people is not the kind best fitted to prevail in the clash of nations, and must have some odds in its favor in order to survive. But nevertheless the process still has political growth, and government by consent of the governed is finding application over an increasing portion of the surface of the earth. The consideration for the masses employed in industry has increased also, but to nothing like the same extent, nor in the same manner.

Considering an industrial enterprise, in which both capital and labor are engaged in production, as comparable with a political organization, in which people of high and low degree are united in a self governing community, what is the most striking difference in the condition of the mass in each? In the political body each individual unit has a voice, and an equal voice, in determining the policies of the government and in the selection of the instruments of administration of the policies, down to the smallest detail by which the life of the individual is affected; but the individual workman has nothing whatever to say about the general policies of the industrial organization, and only in those which may be called the most advanced has he a voice in the smaller considerations and matters with which shop management is concerned. In the matter of wages, in which his interests are opposed to those of capital, he has conquered a voice by association for collective bargaining, but he has made no real attempt to participate in general control, and he is not consulted with respect to it, notwithstanding that his interests therein would not usually be opposed to those of capital, but would be fairly mutual.

An illustration of the participation of the individual citizen in the establishment of the high policies of political government is afforded by a series of national elections in the United States, in which the tariff policy of the country was under determination. Each citizen has had an equal vote in choosing the national legislature which was to enact the policy into law, and the administration which was to execute the law after enactment, and nobody has maintained that the vote was not rightly possessed by the citizen, or that any movement would be in order to curtail his participation in the determination of such difficult questions. On the contrary, not only has his vital interest brought him a conceded right to a voice, but—a much more doubtful point—his collective opinion has been acclaimed as providing the wisest solution which was humanly attainable.

An important matter of policy in an industrial organization would be a question whether new capital should be sought for an extension of the enterprise. The decision should be made in the light of expert knowledge of trade conditions and of the money market, and would seem to be primarily, if not exclusively, the concern of capital. The individual employe in the plant—the private of industry—would seem to be as little entitled, in either justice or expediency, to representation in the councils of the business solons who would discuss the question, as would the private citizen seem, offhand, to be qualified to help choose representatives to form conclusions upon tariff questions, which are the special province of profound students of political economy. Is there any analogy which should induce us to suspect that the practise which has won out in the political affairs of all the advanced nations of civilization, in spite of its *prima facie* lack of promise, might present a reasonable case for introduction, in some degree, in industrial administration.

Let us look first at the justice of it. Has the workman a just claim to participate by representation in the administration of the industry in which he is engaged, by reason of his direct and important interest in its fortunes? It is sometimes asserted that capital is entitled to all the profits of an enterprise, as distinct from current wages and salaries, because it takes all the risk of loss, and also has to carry all the financial burden during any unprofitable interval. But does it take all the risk of loss? If the enterprise fails the workman is thrown out of employment, and he is thrown out in mass, so that it is not a case of an individual transferring to another job almost ready to his hand. Labor in mass cannot transfer thus easily, but upon failure of employment must suffer dislocation of conditions of life; must search for other employment, perhaps involving removal of a family to another locality, with more or less complete sacrifice of a home, and loss of income while effecting the transfer. The risks are very real, and how the catastrophe is supported when the risks turn out wrong is oftentimes a mystery. Whether or not some form of profit-sharing may constitute part of the method of compensation of labor in a given establishment, the very serious disaster for the body of workmen which attends a failure of the enterprise would seem to give them such a vital interest in its success as to entitle them, in accordance with our ideas of fairness, to the exercise of some influence in the administration of its affairs. It is not inconceivable that a speculative spirit might animate a temporary directorate, when common justice would seem to require the opportunity for a warning voice to rise against an adventurous proposal, in behalf of the workmen who have so much at stake for themselves and for those dependent upon them. We have made it axiomatic that taxation without representation is a governmental horror; but taxation takes only a part of the means of livelihood. Why is it then that we look with such complacency upon a government of industry which can risk the whole stake of an unrepresented people, anxiously dependent upon it? Capital, it is true, performs a great service when it takes the initiative in putting together a new enterprise, surveys the field, and concludes that there is room for its establishment; and this service, in which labor takes no part is entitled to reward. But when capital reaches the stage of asking labor to join with it, and the two together proceed to set up the enterprise, labor necessarily

assumes a risk in the undertaking from which capital is unable to safeguard it; for capital cannot offer to labor assured employment, but only employment whose endurance is contingent upon the success of the enterprise. If capital invites additional capital to aid it to further success, it offers to the new capital full representation in the control of the organization. Is there then anything revolutionary in the idea that labor, invited to indispensable coöperation, shall receive some measure of representation in the control whose wisdom is of such intense concern to it? Is not such representation rather in accord with all our ideas of fair treatment of a legitimate interest, and not to be denied except for overwhelming reasons of practical expediency?

Let us now look at the matter of expediency. I take it that an ideal moral condition exists in an industrial organization when everyone connected with it, from the financial ownership to the labor in the shops, is keenly alert to do his own part in forwarding its operations, and anxious to contribute every helpful suggestion which a loyal interest in success may inspire in his mind; and I fancy that any feature of organization which would contribute effectively to the production of such morale would have such a *prima facie* claim for adoption as to require very demonstrable objection to justify its exclusion. What better inspiration could be found for the large number of acute, if not well educated, minds in the working force than the knowledge that in the directorate sat their own representative, mindful of their interests, and taking thought for the harmonization of these with all other interests represented upon the board? A voice in choosing the representative would induce a sense of responsibility, and a feeling of identification with the enterprise, comparable with that which the citizen feels for his own state, or town, and which leads him during a campaign period to study and discuss the issues, to an extent highly contributory to his civil education. The industrial education of labor would do a world of good. Of course, the same argument which would justify electing a representative of the workers to the board of directors would suggest placing workers on other committees and agencies planning in an administrative way for the enterprise.

Everybody knows that a persistent obstacle to coöperation is the suspicion and distrust which come from incomplete information. Smoothness of path of an administrative organization, and absence of excuse for errors, are apt to be taken for granted by those regarding the organization from without, who may be much affected by its acts, but are without knowledge of the reasons for them. Nothing is easier than for a working force to become convinced that the management is out of sympathy with it, and to believe that a given course is pursued without consideration for its rights and interests. Whereas inside knowledge of the difficulties attending the decision to follow the course, and of the hard alternatives presented, might predispose to at least a charitable view and the softening of resentment, if not to acquiescence in the wisdom of the decision. Postponement of an advance in wages, for example, might be regarded differently by disappointed aspirants, convinced that it was overdue, if they should be aware that its cause was a temporary shortage of funds which the interests of neither employer nor employes would permit to be disclosed. The French have a saying *tout savoir c'est tout pardonner*, which may be rendered—to understand everything is

to excuse everything—and expresses the belief that human beings are generally reasonable and well disposed, and their actions would commend themselves to one another if the perplexities under which they were taken could be mutually understood. Such understanding would be strongly promoted by the representation of labor in the administration; and pending the time when the understanding, at a given juncture, could be made specific the accompanying confidence would induce patience.

It is in nowise probable that labor can be of any special help in the solution of the peculiar problems of capital, any more than it is probable that labor in citizenship can afford expert assistance in the writing of tariff schedules; but just as citizenship makes genuine search for exalted statesmanship to fill high political office, so also labor would be concerned to select for its own representative in the administration of the enterprise whose prosperity is so important to it, the best ability at its disposal. A representative thus selected might well be expected to contribute other service than the mere advocacy of the interests of labor; and, as one knowing the workingmen's point of view, and understanding the character of call to which they would willingly respond, could evoke for the service of the management an amount of practical suggestion and a degree of detailed care for efficient operation throughout the shops which might very well turn the scale between profit and loss in a doubtful case of competition. Such a member would be a veritable asset in the directorate. There might even be hope that he could popularize the high output workman in the force; he would be almost certain to try.

Good ownership has often realized the value of consideration in promoting good feeling between management and labor, and has taken pains to foster contentment by a paternal regard for the well being of its working force. A really paternal employer can probably win out over one who is careless of the men's welfare, but paternalism has about reached its limit with independent American workmen, and at its best it must pay a higher price for the same degree of coöperation than a method which substitutes the workmen's lively interest in the work for its own sake. Keenness is more valuable than contentment as a stimulus to contributory effort, and it can be promoted by affording scope to the sense of achievement accompanying participation in the counsels of success. Of course good administration would not rely solely upon this sense for the maintenance of interest, but would allow some individual benefit to result from corporate advantage.

A well known method of tying the working force to the ownership is by the distribution of stock among the former. This does away with conflict of interest by producing identity of employer and employe, and to the extent to which it takes place avoids the difficulty of the separate status. That there is no necessary limit to its extent is shown by the successful operation of coöperative productive associations, in which there is no capitalistic ownership in the ordinary sense. Participation in administration could always follow this process when the employes should become possessed of a sufficient number of shares to enable them to elect a director, and the representation of labor in administration would thus result from application of the financial principles already in practise. Why does not this method offer the right way out?

The way out is good as far as it goes, but it does not solve our problem. Labor owning shares does not partici-

pate in administration as labor but as capital, and all the other labor is left unrepresented. In so far as the laborer becomes capitalist the problem is avoided; but, although it is generally more attractive to eliminate problems than to attempt their solution, they will still clamor for solution unless the elimination is fairly complete; and the prominent examples of stock distribution to labor, in American industry leave the labor far from any voice in administration, and leave labor contemplating the lapse of a long period before its voice can be thus raised through growth of ownership. Participation as labor can be effected as soon as the principle is recognized.

If the point is sound, that the vital interest of labor gives it a right to representation in the administration of industry, it may be assumed that the soundness will come to be recognized; and thereupon a people accustomed to self-government will know how to make use of public sentiment to bring about the practise of participation. Capital now being in conceded control is in a position to make concessions, and if it will do so can make them gradually, to the great advantage both of itself and of labor. Using still the governmental illustration, the gradual growth of the Anglo-Saxon people in political power, although not unaccompanied by clashes, has been much more conservative of the national well being than was the convulsive process of the French, who endured three quarters of a century of disturbance between the revolution of 1793 and the final establishment of a self governing republic in 1871. The people of Mexico are unable to secure any voice or any consideration in their government because, being utterly ignorant and illiterate, they are unable either to comprehend participation or to use the power of their numbers to give or to refuse to their usurping officials any effective consent of the governed. But if they were to be miraculously accorded from on high the power to control their government the country would promptly go to smash, as has been the case in Russia, leaving nothing but a wreck to govern. A Philippine aspirant for independence illustrated for a member of a visiting congressional party the great advance which would be made under freedom, by telling him that they would at once abolish taxation, throwing off its burdens in a single act. Although the degree of industrial knowledge of American labor is far superior to that of the political knowledge of the Mexicans or the Philippines, the sudden injection of the mass into the power and responsibility of superior administration, without first the information and then the growth accompanying a gradual process, would result in disaster both to the vested ownership and to the new freedom sought by labor, and would leave the latter subject only to a new tyranny, like that of Lenine and Trotsky. But every reasonable concession should reduce the unreasonable minority, making demands, and should conduce to sane progress accompanied by a minimum of mistakes.

Existing unrest and radical programs, put forth by agitators, arouse apprehension and anxiety; but there are hopeful signs. The writer has had his struggles with organized labor and has come through them, he hopes, with mutual good nature. In the operation of the government arsenals, in which several thousand workmen were engaged, opposition of labor unions was encountered to measures of efficiency of which the object was the increase of production with accompanying increase of pay, and the opposition was sufficiently influential to secure the insertion in appropriation

acts of legislation prohibiting the payment to any employe of any premium, bonus, or cash reward in addition to his regular wages. This action was in accord with the expressed policy of the Federation of Labor against piecework payment. But since the war the official spokesmen of labor have indicated a change of view, advocating payment for performance in the interest of production, of whose necessity they have expressed a deep appreciation, and the legislation no longer appears on the appropriation acts. An aversion to stimulated production, sufficiently widespread to influence the national legislature, has thus been changed to a plea for better production, and advocacy of the most direct method for bringing it about. This does not look like refusal to see reason. The records of the arsenals, under the stimulus which was afterward for a time prohibited, show that industry in general can well afford to maintain the standard of living which has been attained by labor, if labor will give the output of which it is easily capable; and the present attitude of its spokesmen encourages belief that the output may be had, and that industry can flourish without an unwelcome struggle to force labor back to a less attractive life. All of which is evidence that there is something besides radicalism in the air, and that labor's representation in the counsels of administration need not be expected to urge an abandonment of conservatism.

Labor is better informed as to management than it is as to administration. It is in intimate contact with shop methods and rules, with machine capacity, with discipline and the spirit of the working force, and is capable of more useful assistance and of more abundant suggestion with regard to these matters than with regard to the class of thing which has been considered as very much the exclusive province of capital. Good argument could, therefore, be made for more complete participation and greater responsibility of labor in management than has herein been advocated for its representation in administration. But a voice accorded in administration would have opportunity to present the case for an appropriate share in management, and besides, the latter is now receiving the best kind of presentation, by practical trial in an increasing number of establishments.

So no space has been occupied in setting forth herein the practicability and the advantage of inducing labor to take the management's point of view in shop matters; neither has any effort been made to propose the methods of inducting labor into a share in administration, beyond the suggestion, by way of illustration, of representation on the board of directors, in the case of a corporation. When it is recognized that capital and labor have vastly more in common than they have in opposition, it does not seem difficult to admit the principle of coöperation between them in forwarding the larger as well as the smaller affairs in which they are interested together, and with this admission, practical good sense will not be at fault to find ways for bringing coöperation about. There is something inspiring in the vision of these two great forces working together in the struggle of industry for their own advancement, and in the service of mankind, while using their association to compromise their conflicting interests, after the manner of sensible men everywhere.

Production and Profits

By Henry S. Dennison

President, Dennison Manufacturing Co., Framingham, Mass.; President, the Taylor Society

THE influence of production on profits has always been obvious and methods of reducing costs by increasing production have received very general attention since Mr. F. W. Taylor's careful analysis of the factor of overhead expense; but the influence of profits on production, though always a very real factor in industrial engineering, becomes obvious only under special conditions. In England during the war, in those cases where the earnings of the wage worker were increased to a point sufficient to fulfill all his ordinary desires, the final disposition of the profits arising in connection with his efforts became a very real force in spurring him on or holding him back. In spite of possibilities of increasing his own earnings, a normal human being will find his efforts lessened by the knowledge that he is also increasing an already liberal return to some absent stockholder; or will be moved to demand a larger share for himself and to stop work in support of that demand, and even to relax his efforts after the demand has been granted. On the other hand, there are millions of instances the world over of almost superhuman energy given forth week in and week out for four long years where the sole advantage beyond the pay envelope accrued to the worker's country and its allies.

American business men have taught their fellows that each business venture is an undertaking for profits and that they cannot be surprised if the profits of a business and the people to whom they go are subjects of real interest to every employee. Wherever, to the minds of employees, the distribution of profits has the flavor of justice, of a reasonable connection of cause and effect, of reward and dessert, the great majority of them feel a mild sense of satisfaction. None but that almost negligible percentage of true radicals, which is always with us, begrudges the reward of an Edison, a Vail or a Henry Ford, nor the reasonable reward of those who have risked their money in useful ventures. However, unrest begins and restless propositions arise where increased profits are known to be going to those who are inactive and whose public service is invisible.

Today, when production to support life is as seriously needed by the world as was production to destroy life during the war, this influence of the distribution of profits upon the primary agent of production is a challenge to all men interested in the profession of management. When we have to face any of the mechanical problems which the industrial process presents to us by the hundred thousand, we know that a careful analysis of causes and effects of the elemental forces and their interrelations is essential and we waste no time in cursing the crotchet of the machine or the crankiness of the material, but set to work finding the sources of trouble. Not so many managers have yet learned the value of maintaining the same clear-sighted, common-sense attitude when the problem lies within the field of labor. Yet it is obvious that the forces at work, brewing and stewing among a thousand employees, are as vital or as fatal as those in any electric furnace. I know many

managers who will say that presently the strain upon the labor market will ease, reducing the worker again to a position in which his annual earnings will be hardly more than enough to support his family, and enhancing in his mind, therefore, the importance of the monetary incentive. Such will undoubtedly be the case; but exceptional management will foresee that when the labor market eases the present seller's market will disappear, and every economy in production will be needed to make up for the losses of reduced output and the desperation prices of competitors. Facing this situation frankly and without whining, the wide-awake manager will find himself confronted with a new opportunity to use the power of an indirect economic incentive, which will demand from his staff as thorough and daring an analysis as the work Mr. Taylor applied to the problem of production as connected with the direct economic incentive.

At the very first of such an analysis the manager will find himself facing the whys and wherefores of the present form of corporate organization. He will discover that originally the forming of corporations was supposed to be a problem for the lawyer only and, in fact, it was chiefly, but that today the correct legal conception of a corporation as a fund of money in a statutory suit of clothes leaves some very essential factors out of account. He will find that corporate structure calculated to respond to all sorts of stresses and strains is as much a matter for scientific planning as are the foundations of his buildings and furnaces.

PROFITS

Three matters of primary importance to the corporation are the ownership of its property, the distribution of its profits and the control or management of its affairs. The distribution of profits can be looked at from two points of view by the industrial engineer: the possible effects of profit distribution in stimulating an increase of efficiency, and the harmonizing of the distribution of any shares in the profits fund with the ordinary conceptions of justice or dessert. These points of view are rather closely related, but worth keeping apart during the early stages of analysis; they run eventually very close together because of the important though frequently concealed effects upon efficiency of a gratified or outraged sense of justice.

From the efficiency or dynamic point of view we find a rather sharp distinction between the investor and the group of active workers for the corporation. The investor's service is performed in a single act but after it is once performed it cannot be stimulated to a greater or less efficiency by a fluctuating return. The interests of the corporation may demand renewed supplies of investment capital, but it is usually possible to make appropriate terms and conditions to suit each similar need. Services of the workers on the other hand, whether of managers or managed, is a continuing act necessarily varying in effectiveness from day to day in response to a great complex of influences, physical, physiological, psychological, and worse. Such services are, therefore, peculiarly apt to be spurred by a fluctuating reward.

Sound engineering would therefore seem to indicate that the investor be traded with so far as possible on the basis of some fixed return, immediate or future, as is now the case with bondholders and preferred stockholders; that the managerial forces be given compensation, a significant part of which shall fluctuate closely in accord

with the fluctuation of profit; that labor be hired on base rates and piece rates to vary with such variation of individual values as are measurable, and, in addition, shall receive a return of secondary importance which shall be dependent upon labor's share in management and the varying success of management as shown in the profits account.

From the more static point of view of abstract justice, little will be found to conflict with the requirements of efficiency. The agreement with the investor for his reward must include consideration of the use of his service—capital, the degree of risk of loss to which he is subjected, and a further return depending upon the degree of control he exercises in choosing management and policies. These three considerations together may, in any given case, amount to a very considerable rate which cannot be earned in the early years of the corporation's activities. The contract, nevertheless, should be a definite one, including at some period a virtual maximum. The agreement with the managerial forces must take into account their training and experience, the risk of unemployment due to failure of the enterprise, and the value of their services, and must also include some portion of the profits, which beyond question the managerial forces are a determining factor in making. The agreement with the labor forces must in the same way consider training and experience, measurable individual abilities and such plus values as the spirit of coöperation, freedom from need of supervision and special quality of output. Length of service calls for special consideration, usually best detached from the weekly payments dependent upon the foregoing factors. Finally, wherever the labor forces as a group have a significant share in developing the policies of management, it is just that a proportionate and appropriate share in the profits be provided.

It is perhaps unnecessary to warn that in all the foregoing it is important to distinguish strictly between the investor function and the manager function even where both may be, as they so often are exercised by the same individuals. The investor's status may be passed along by will or by his own act to whomever he pleases; except in the most autocratic examples of corporate structure. This is not true of manager's rights and status; hence the two at any time may become entirely separate and must always, therefore, be so regarded.

CONTROL

A consideration from the engineering point of view of the factors of control follows along much the same lines. That kind of control is not necessary to the simple investment function as proved by the existing millions of non-voting bonds and non-voting preferred stocks. Control, however, has a definite correlation to degree of risk and a share in control is an appropriate function of the investor in the early stages of the normal corporation and at any time if preferred stocks or bonds find their agreed rewards endangered. Control still more clearly is correlated to knowledge and experience in the affairs of the corporation and is therefore particularly appropriate for the managerial group. It is, of course, true that knowledge of general business principles is desirable on any board of directors, but it is equally true that this knowledge can as wisely be obtained by the travel and study of the man who also knows the peculiar problems of the corporation itself as by the man who gains a balance-sheet knowledge of many corporations and a production knowledge of none. In

considering the degree of control appropriate to the managerial group in any specific case, it is wise so to define this group as to bring within it a considerable number of those trained men upon whose creative efforts the success of the corporation depends. Conceiving of the managerial group as including such grades as principal salesmen and principal foremen adds factors of breadth and of safety from exploitation which are worth careful consideration. The degree of control as shared between the managerial and the investing groups will vary, then, with the risk of the investment, and with the skill and broad inclusiveness of the managerial group. Appropriate safeguards for any type of control structure are not difficult to devise. Where the investor group and the managerial group are one, the control problem is for the moment simple, but, on the other hand, the inevitable separation of interests can more easily be provided against at that early stage.

ABSENTEE CONTROL

The evils of absentee ownership and control are universally recognized, though far from universally acknowledged. Where absentee control exists legally, as it does in most of the large corporations, there is present, about nineteen years in twenty, an "inside" real control based upon the ownership of any percentage of the vote from Mr. Havermeyer's 7 per cent up; and on the twentieth year there is a struggle for this "inside" control. Unfortunately, for the general run of efficiency, the term "inside" usually means inside from a financial point of view, not from an operating point of view. In the past, "inside" control has sometimes meant financial exploitation, but has seldom meant a concentration of emphasis upon operating efficiency. No man in active contact with production pretends that hiring managers to make good showings on balance sheets is the last word in efficiency methods. Moreover, where directors are by virtue of their own real business vitally interested in up and down fluctuations of the prices of stock, a view of industrial efficiency, which takes into account all the human factors and looks ahead for long-time values, can hardly be expected to become automatic. The evils of absentee control have been salved over by devious subterfuges and greatly minimized by the fact that competitors usually suffer from the same disease, but these accidental and temporary palliations can give little satisfaction to the engineering mind.

As to the share in control appropirate to the labor force, it is clear that, as with investors, they have a point of view which must in justice be taken into account upon such subjects as fluctuating employment, which affects the risk of their steady livelihood, upon wages and hours and the other labor policies of management. Hence, the development of works councils and joint advisory committees is a natural step not only in justice to labor but also in the interests of wise management of the corporation.

Clearly, therefore, a corporation structure, as safely and as wisely adapted to its purpose as any of the great machines it may own, would provide for appropriate contracts for return to capital, some degree of managerial partnership, some real provision for the voice of the employee to be taken into account in settling the problems which vitally concern him and a corresponding share to the employee in the ups and downs of the corporation's profit.

The Manager's Responsibility for Production

By Charles de Freminville

Consulting Engineer of the Schneider Works, Creuzot, France; Hon. Memb. A. S. M. E.

Translated from the French by Eleanor Bushnell Cooke

THE title of this paper enunciates the fundamental principle of Scientific Management: "The Manager's Responsibility for Production."

The existence of this responsibility appears so self-evident that the necessity for insistence upon it may seem peculiar. It may be said, however, that the importance which should be attached to the matter and which we shall be obliged to emphasize has not been generally understood.

Our great French fable writer, La Fontaine, shows us in *The Bemired Cart Driver* that the driver's first impulse in this predicament is to make use of his whip. It would undoubtedly be quite unfair to accuse the employer of obeying the same impulse. He has of his own accord abandoned "driving" in favor of the bonus. However, it has required an inspiration from on high to make him understand, as was the case with the cart driver, that his duty, as well as his interest, demands his intervention *to smooth out the difficulty before demanding exertion* or, in other words, to actually assume the responsibility for production.

Principles of the Manager's Responsibility for Production

To get a hearing, this inspiration, as Ralph Waldo Emerson puts it, "like those qualities still hid and expectant, must be disenchained and walk forth to the day in human shape." It is Frederick Winslow Taylor who represented the human expression of this idea. He saw the beginning of it in the study of the technique of the work itself—in the work of the machine tool—when the scientific method was applied to it in so remarkable a manner, that our greatest savants offered it as a model even to men of science. That was the attack on the material obstacle and the first results were marvelous. Taylor made us see that the production of a machine could be increased by two or three times its previous output if properly designed, properly equipped with tools, and properly operated.

But he also demonstrated to us that it was impossible for the workman, if left to himself, to discover the means of obtaining such results or how to accomplish them easily, and that, in order to materially increase his production, he had, after he was selected by the manager in view of his all-round fitness for the work, to be guided and instructed by the management, and finally, convinced that he could work more intelligently and earn better wages with less fatigue by following the indicated path.

Finally, he demonstrated to us that the machinery, and more often the equipment of tools, were not only imperfect, but were also very far from being utilized in such a way as to produce what they should normally accomplish. The man who used them in the shop had an attitude which Taylor qualified as "systematic soldiering," and this attitude was characterized on the outside by the expression "restriction of production" adopted by the labor unions.

"Systematic soldiering" and "re-

striction of production" exasperated Taylor to the last degree. We see him going back to the source of the trouble, and recognizing that it arose from the very conception that the manager entertained of his functions; from his belief that he could put the entire responsibility of regulating all the details of the work, and of assuring adequate production, on the foreman and the workman, who were entirely incapable of attending to it properly, even when encouraged by the most ingenious system of wage payment.

The principle of the responsibility of the manager in all of the factors influencing production appears to us to be as follows: the establishment of a technique based on scientific experimentation; the intelligent selection and assignment of the workman; the development of the workman through instruction and training; and lastly, the preparation of the work, which sums up the putting into practice of the principle of responsibility and depends on numerous collaborators, all of which, although perfectly clear now, was far from being at all understood at the beginning.

The criticism of the methods generally employed was severe and there was reluctance to admit that it was just. In order to thoroughly understand its bearing the matter had to be viewed from quite a different angle than any which had previously been taken. Now, no great change in the orientation of ideas can be brought about quickly. New facts are first appreciated with the aid of old ideas.

The conclusion drawn by people in general from Taylor's investigation was that the workman did not work hard and that he could produce two or three times as much without unduly fatiguing himself. Moreover, they felt that it ought to suffice to offer a premium for greater production. There were some, however, who were afraid that this method would bring about overwork and overproduction, the latter evidently being considered an evil, which might have been true if by overproduction a lack of equilibrium in production had been intended.

Such was the first welcome which Taylor's ideas received in France. It was followed by hasty attempts at application depending on the correctness of the conception entertained. Recourse was had to offers of bonuses which had the effect of accomplishing an increase in production on the part of individual workmen. These men, left to themselves, sometimes went so far as to overproduce, and such misdirected enthusiasm was followed by enforced pauses, then by a lack of material, or more often, by a lack of coördination in the ensemble of the work.

When these experiments were succeeded by demands which it was impossible to satisfy, strikes were precipitated which threatened to completely discredit the Taylor methods held responsible for them.

It was, however, only necessary to turn back to the teachings of the master to prove that his precepts had not been followed; in fact, that the very opposite track had been taken.

TIME STUDY AND WORK ANALYSIS

It was their failure to understand the position which Taylor gave to the principle the manager's responsibility for production which ran the authors of the first experiment so miserably aground.

In order to thoroughly grasp this principle and to appreciate its importance, the manager must undertake to make for himself an analysis of the operations executed in his shop. This is the only way to demonstrate to his own satisfaction

the weakness of *à priori* conceptions, which were, however, up to this time, considered sufficient guides in solving such problems of production as present themselves in a modern shop.

However, this is not as simple as it may at first appear. The writer of this paper must admit that in his own business, although favorably situated, he entered on this path with some reluctance, and that the personal influence of Taylor himself was necessary before he followed it in its entirety.

At the time he became acquainted with *Shop Management* published by M. Henri Le Chatelier in the *Revue de Métallurgie* he had for several years been manager of some very flourishing automobile factories, and his attention had been largely taken up with the problem of production. From the beginning he had applied himself almost entirely to the study of the plans of manufacturing and to as regular and constant a distribution of work as possible. Thanks to the method followed, he had obtained important results and had arrived at the point of conforming, with great regularity, to a complicated schedule of manufacture. But he was convinced that the manufacturing procedure in these factories, was above the prevailing average, and it was not easy, in this particular case, to greatly increase the production by its improvement.

On the other hand, the unsuccessful experiments, which had been made in the place where he happened to be and to which he has alluded, made it hardly desirable to attract the attention of the workmen to methods that were at the moment very unpopular.

However, one of the principles enunciated by Taylor had struck him with particular force—that of charging functional foremen with the training of the workmen—and it seemed to him easy to take a step in this direction. The workmen of the shops which he directed were in the habit of consulting with the "layout" men when they were confronted with difficulties. These latter were young men from the technical schools who were consequently better educated than the workmen but were quite popular because they were treated on the same footing with them during their apprenticeship. The workmen and the "layout" men being on excellent terms, the workmen generally took in good part the advice the latter gave them. In order to take advantage of this situation it was decided to increase the number of "layout" men and to give a well defined function to each. One demonstrated how a jig should be used; another how the machine should be operated; another was engaged with the relations with the tool equipment; another, with the upkeep of the machines; another, finally, and more particularly, with the routing of the material through the shop, etc. The benefit of this measure was quickly felt without any necessity for discussion about the introduction of a new system or of anything approaching it.

This novel use of the "layout" men served still another purpose for the writer. He chose it as a subject of conversation at the time of his first conference with Taylor when M. Le Chatelier introduced them in Paris in 1912.

The author of *Shop Management* had been represented to him as very insistent on the manner in which his ideas should be put into practice; and he feared it might be difficult to interest him in any adaptations, however necessary they may have seemed. Far from criticising what had been done, Taylor voiced his approval of what he considered an evidence of tact, and

from that moment, he seemed to lend himself willingly to an exchange of ideas.

Strange as it may seem, it is difficult for the writer to make clear today, how far he was at this time from having grasped Taylor's idea. He remembers, however, that when he saw him again in Philadelphia several months later, he propounded certain questions on the effect of these methods on the workmen, which probably would have greatly surprised Taylor had he not become accustomed to meeting continually a similar lack of understanding. Taylor took the pains to repeat an explanation which he must have made more than a hundred times and, after a visit to the Tabor Manufacturing Company, he introduced the writer to his principal collaborators and experts with whom he could continue to keep in intelligent touch while visiting the shops in which the new methods were applied. For the writer this was the beginning of a more exact appreciation of the meaning of the responsibility of the manager for production.

On his return to France he received visits from Mr. Taylor and from several of his new American friends, with whom he had long and fruitful conversations on these questions concerning Scientific Management. However, on the eve of departure, in a letter which he treasures highly, Taylor once more advised the writer to devote himself to the study of one particular piece of work, and to push this study to the very bottom.

When he undertook to put this advice into practice he was very soon convinced that the detailed study of any piece of work opens the eyes in an astonishing degree to the extent of the manager's responsibility for production. To cite only one typical example, let us take the case of a workman's drilling small holes in the caps of the connecting rods of automobile engines. This operation required only a slight effort, but the man who did it was continually stooping to pick up the caps from the ground. His output was considerably reduced on this account and he tired himself out. It would have been entirely different if the machine which he used had been supplied with a table on each side so that he could without any trouble pick up the piece to be drilled when he put down the one already finished. But the shop was too crowded to arrange for these two tables.

However, as the machine thus equipped would have taken the place of two or three machines such as were used under conditions just described, the problem was not insoluble. But it was a problem of broad and far-reaching scope, involving more than the drill press in question as it required the complete rearrangement of the shop. It was a demonstration of the importance of doing away with the congestion of the factory—a point on which Taylor insisted—and he made the writer visit the Tabor Manufacturing Company. This apparently simple demonstration was a veritable revelation.

In continuing, in a still somewhat casual manner, this analysis of a piece of work, by making time studies on a few tasks without bringing about any change in the method of their execution, the pace of the workman varied greatly depending upon whether he had just had his fortnightly payment figured from his piece work tickets or time cards, or whether he was approaching the time when this was due to be done. The output varied as much as a hundred per cent and, moreover, the most expert eye was unable to account for it after taking a general impression of the situation.

This observation was not made by a stranger, but by the very man who had established this factory and had been managing it for more than ten years with a zeal which he has since brought to bear on an analysis of the work. In this case it was necessary to take up and correct the method of compensation for the work which did not furnish sufficient incentive to the workman.

The principle on which this method of figuring earnings rested was, however, equivalent to the system of a fixed bonus for a given output, which is in itself perfectly acceptable, but the estimating of the time which served as a basis for its application was not pushed far enough. It had, in particular, the fault of being limited to cutting time instead of extending over all such operations as management, distribution of material, etc.

Many people to whom these examples have been cited have thought that they must have occurred in a very badly managed factory which was far from the truth. This shop was justly considered one of the best of its kind and it may be said that the prevailing spirit was excellent.

From this time on the writer's conviction was completely established as to the responsibility of the manager for production.

THE OLD-TIME ARTISAN IN INDUSTRY

It was necessary, then, to admit that the conditions under which modern industry functions demand that the manager assume a far greater responsibility for the operations of the shop than he had previously done, and that, failing to assume this responsibility he can obtain only an unsatisfactory output. How could such a situation have come about? How had it succeeded in perpetuating itself? In order to explain it we must take up again the origin of the development of the modern manufacturer.

Industry is obliged to exercise many different functions. The manufacturer must form a conception of what articles industry should produce, and then make them realities and bring them to a degree of perfection compatible with the means at his command. Finally, it is his business to produce these articles in greater or less quantity. The relative importance of the place occupied in industry by (1) the conception, (2) the realization and (3) the production may serve to characterize the different stages of the development of industry.

The relatively simple conception of the primitive artisan was followed by only crude and imperfect accomplishments. Then, as the skill of the artisan developed his conceptions became bolder and they were often realized with remarkable perfection after the greatest difficulties had been surmounted. But this was exceptional and all the ingenuity, and even at times the science expended by the author, was finally lost to the world; because if not jealously hidden, it was unrecorded.

Finally, with the desire of obtaining these articles in quantity and as perfect as possible, came the period of production which is characteristic of modern industry. In the last few years it has acquired an importance altogether exceeding anything ever attributed to it in the past.

But our conceptions of industrial organizations have continued to be strongly influenced by the man who had directed them at the beginning; *i.e.*, by the artisan such as he was two hundred years ago, who was the object of a profound admiration on the part of our ancestors.

We picture him as a man of extraor-

dinary intelligence and skill, endowed with such personal resources that he could, by himself, conceive and execute the entire work, surmount all the difficulties, and penetrate by a marvelous intuition all the secrets of nature.

We do not hesitate to do him homage, and we shall always hope to find him on every round of the ladder of industrial organization from the manager to the workman. He is the exceptional man on whom our ideal is modeled.

Far be it from us to seek to dim the memory which this desirable individual has left behind, but if his masterpieces, which we love to study, arouse our admiration, they frequently make us feel a regret that all the skill of the author has disappeared with him without leaving any trace, and that these masterpieces constitute rather a challenge than an example. In fact he produced little and failed to be a leader of men.

This artisan, however, has continued to exercise a preponderating influence as the problem of intensive production has arisen. He has no longer applied himself to accomplishment through physical effort and skill but to the development of more or less automatic machinery which, following the formula adopted by the economists, is able to transmit his skill to a number of men. He has succeeded in it even when he was handling such delicate tasks as those which the Jacquart looms perform, and naturally enough, has continued to be our inspiration. It is from him that the type of industrial organization, called in France *débrouillage*, based upon individual force and ability, has developed, built from top to bottom on the presence of "the exceptional man," and upon the shrewdness of the individual. Since the French artisan has been from time immemorial among the most remarkable, we have had in France more than elsewhere, perhaps, and for a longer period, a great confidence in this organization, which after all has made it possible for us to turn out new products promptly and even to obtain high grade goods although often in limited quantities.

We are obliged to conclude, however, that the organization of *débrouillage* is not sufficient to satisfy the demands of the era of production and that we must adopt a new standard. This new standard, however, will permit us to utilize better than ever before the qualities to which our old time artisan owed his incontestable superiority and which he has bequeathed to his descendants.

NEW INDUSTRIAL CONDITIONS

The industrial manager must not only assume the responsibility for production in a far greater degree than has ever been done in the past, but he must also get an entirely new conception of his function and must use entirely different methods in the practice of it.

Where, following the tradition of the past, the manager believed that he was able, on the one hand, to base his judgment and rest his authority almost entirely on intuition, and on the other hand, that he did not have to depend on anything but individual effort when it came to action, he now must perceive that in the future it is necessary for him to submit his intuition, however valuable it may be, to the control of experimental science, and to call on all the specialized departments to coördinate that collective effort which has become indispensable.

What has been accomplished is nothing short of an absolute reversal of accepted ideas. However, there is nothing in this that is peculiar to industry. On the contrary, it is the river bar

which drives back the stream again when it changes the course of the current behind it. The shop seems to have been one of the last places that it has reached.

For a long time the *à priori* conceptions, emanating from the brain of an exceptional man, have been considered the normal points of departure for the works of science, and the most sure support of the leader's authority. Scientific experiment for the determination of facts or rules was regarded as an entirely too complicated and even too uncertain quantity to be utilized.

But one day, a fact, as simple as the fall of an apple, intently observed and carefully interpreted, threw over science such a vivid light that it has been able to completely transform its methods and to give its proper place to scientific experiment.

In becoming experimental, science has been able to endow industry with enormous resources, whose practical use has given birth to the present-day civilization, which exacts collective effort in the highest degree.

However, ideas are adapted but slowly to the conditions of this new life. Individualism has not abandoned its habits of domination without protest nor without producing considerable friction. But the case of the factory is particularly curious because up to this time it seemed to be the last thing to take into account a situation which could not have developed without its aid.

The work shop was born and has developed under the influence of the ideas of a former time. There also, the analysis of facts and experience began by being considered too complicated to serve as guides for the management. A study of the details, far from being scientifically undertaken, was abandoned in favor of the inspiration of the workmen and of their immediate superiors. It took Taylor to dissipate this error and to show that in the work shop as elsewhere a study of the facts, however simple, constitutes the only basis on which one can build a line of stable management, and that it furnishes also the means of accomplishing effective coöperation among all the component parts of a modern factory. This is a point of first importance.

Finally, the use of machinery has made it possible to call collaborators to the factory who could not up to that time apply themselves to any but the roughest, the most thankless and the worst paid tasks. One would expect them to find themselves very happy because of their liberation. But in these very men, this new spirit manifested itself, born of the living facilities created in civilized countries by the development of industry itself, making men desire in the shop, as elsewhere, a certain participation in the intellectual as well as in the business life. These are aspirations which should not be ignored, for if they are thoroughly understood they can be of invaluable assistance to those who have the responsibility for production.

Index

Administration, Labor's Interest in. Major-General William Crozier, 153–158.

American Federation of Labor: piece-work payment, 158; scientific research, adoption of resolutions on, 132; fullest service by labor advocated, 57; necessity for shifting of labor, 16; shop committees, 9.

Appleton, W. A. A Labor Attitude toward Production—an English Point of View, 76–78.

Arbitration, 24–25.

Ardzrooni, Leon. The Philosophy of the Restriction of Output, 70–75.

Capital, 8.

Cheney, E. P., 46.

Collective bargaining: agreements, 48; is it incentive to production, 42; results of, in industry, 45; piece work, 46; production methods, 45; strikes, decrease in, 47.

Collective Bargaining and Its Effect on Production. William M. Leiserson, 40–49.

Competition: coöperation and, 3; for profit, 1; in service, 1.

Conciliation and mediation, 24.

Cooke, Morris Llewellyn. Editor's Preface, vii–ix; 50, 53.

Coöperation; basis of, 36; competition and, 3; effect of, 38; worker's fitness to manage, 37.

Cornick, R. L. Organizing the Shop for Production, 36–39.

Crooks, Sir William, 131.

Crozier, Major-General William, Labor's Interest in Administration, 153–158.

Davenport, H. J., 75.

Dennison, Henry S. Production and Profits, 159–162.

Drinker, C. K., 112.

Drinker, K. R., 112.

Drury, Horace B. Labor and Production, 79–88.

Edison, Thomas A., 76, 159.

Editor's Preface. Morris Llewellyn Cooke, vii–ix.

Emerson, Ralph Waldo, 163.

Employer, relations between employe and, 12.

Engineer, Every Worker an. Henry Wood Shelton, 1–6.

Erskine, Lillian. Women in Productive Industry, 93–97.

Extravagance, price of, 61.

Fisher, Irving, 28, 72.

Ford, Henry, 159.

Foreman, The—His Training and Education. Benjamin E. Mallary, 121–126.

Foremen's School: the instructor, 125; instruction methods, 125; organization, 123; course of study, 124.

Frayne, Hugh. Will Greater Production Cure Social and Industrial Unrest, 56–63; 110.

Freminville, Charles de. The Manager's Responsibility for Production, 163–169.

Frey, John P. Labor's Attitude toward Methods of Management, 140–145.

Gompers, Samuel. The Workers and Production, x–xii; viii, ix, 22, 50, 79.

Government, Federal, and Production. Grant Hamilton, 98–100.

Government, policy of, in distribution, 21.

Hamilton, Alice, 118.

Hamilton, Grant. Federal Government and Production, 98–100.

Hanson, William C., 103.

Harris, Louis I., 116.

Health: importance of, to production, 10; occupational hazards, price of, 105; production and, 32; sanitary equipment of plants, 106; universal insurance, 119.

Helfferich, Karl, 51.

Herriot, Edouard. Labor and Science, 50–55.

Hillman, Sidney, 30.

Hoover, Herbert, 6, 40, 53.

Hopkins, E. M., 139.

Hotchkiss, Willard E. The Bases of Industrial Stability, 19–25.

Howe, Frederick C., 89.

Howe, Harrison E. Research and Production, 127–132.

Hoxie, Robert F., 142.

Industrial: new conditions, 168; did war revolutionize conditions, 94; democracy, 4; financial incentive the industrial motive, 14; other incentives, 18; group influence, 21; leadership,

2; old time artisan, 167; organization, 14; pension systems, 109; psychology, 20; research, need for, 98; safety, 131.
Industrial Hygiene as a Factor in Production. Bernard J. Newman, 101–107.
Industrial Relations and Production. Matthew Woll, 7–13.
Industrial Stability, the Bases of. Willard E. Hotchkiss, 19–25.
Initiative, Production and the Preservation of. Helen Marot, 14–18.

Keynes, J. W., 34.
Kipling, Rudyard, v.
Kober, George M., 103.

Labor: management and, in production, 140; manual worker, 77; modern labor movement, 80; organized labor and scientific methods, 5; its new found strength, 152; importance of, in national stability, 57; policy needed to decrease turnover, 111; production systems, attitude toward, 141; production, main interest of, 83; psychological tests, 109; science and, 51; shall labor be ruled by force, 61; stock distribution, 156; what is labor, 76.
Labor's Attitude toward Methods of Management. John P. Frey, 140–145.
Labor Attitude toward Production, A—An English Point of View. W. A. Appleton, 76–78.
Labor's Interest in Administration. Major-General William Crozier, 153–158.
Labor and Production. Horace B. Drury, 79–88.
Labor and Science. Edouard Herriot, 50–55.
Lapp, John A., 119.
Le Chatelier, Henri, 165.
Lee, Joseph, 28.
Leiserson, William M. Collective Bargaining and Its Effect on Production, 40–49.
Lenine, Nicholai, 54.
Lynch, James M. Some Expectations of the Workers, 108–120.

Mallary, Benjamin E. The Foreman—His Training and Education, 121–126.
Management: Importance of labor in, 8, 9; management and labor in production, 140; organization, responsibility for, 1; production, problem of progressive, 134; progressive management, lines of action for, 137; specialized function, 133; sound managerial policies, necessity for, 122; manager's responsibility for production, 163; unprogressive managers, 136; workers' fitness to manage, 37.
Management, Labor's Attitude toward Methods of. John P. Frey, 140–145.
Management and Production. Fred J. Miller, xiii–xv.
Manager's Responsibility for Production. Charles de Freminville, 163–169.
Management, Selling Production to. Harlow S. Person, 133–139.
Marot, Helen. Production and the Preservation of Initiative, 14–18; 30.
Marx, Karl, 54.
Miller, Fred J. Management and Production, xiii–xv; ix, 50.
Mitchell, John, 120.
Mitchell, Thomas Warner. What is Production? 64–69.
Morley, Christopher, 139.
Mutual Agreement, 1, 4.

Napoleon, 35.
Newman, Bernard J. Industrial Hygiene as a Factor in Production, 101–107.

Occupational diseases, problems of, 118.
Okuma, Marquis, 52.
Oliver, Thomas, 103.
Organization: responsibility for, 1; technical, inefficient, 19.
Output: object of restricting, 70; limitation of supply, 72.
Output, The Philosophy of the Restriction of. Leon Ardzrooni, 70–75.

Parker, Carleton, 34.
Partnership, 31.
Person, Harlow S. Selling Production to the Management, 133–139.
Piece work: collective bargaining and, 46; attitude of American Federation of Labor toward, 158.
Pillsbury, Warren J., 113.
President's Industrial Conference, Report: informational service, 24; plan for settlement of disputes, 24.
Production: cause of, 64; collective bargaining, 40; control, 161; coöperative social advantages, 91; is decreased, fault of labor, 56; direct and indirect, 66; government functions in, 99; government participation in, 100; human nature and, 26; increasing yields, 130; industrial relations and, 7; labor and, 79; labor's attitude toward systems of, 141;

labor problems of, 8; labor participation in management essential to, 41; methods, conception and application, 150; need for new system, 86; vital factor in reconstruction, 95; research and, 127; upon what does satisfactory production depend, 144; does overproduction cause unemployment, 77; shop control, 146; sanitary working conditions vital to, 103; difficulties of systems, 143; utilities, 65; lessons from war-time, 15; sickness a factor in decreased, 115; worker's attitude toward, 40; working conditions retarding, 101; what is production, 75.
Production, Collective Bargaining and Its Effect on. William Leiserson, 40–49.
Production, Coöperative. John H. Walker, 89–92.
Production, Federal Government and. Grant Hamilton, 98–100.
Production, Industrial Hygiene as a Factor in. Bernard J. Newman, 101–107.
Production, Industrial Relations and. Matthew Woll, 7–13.
Production, A Labor Attitude toward—An English Point of View. W. A. Appleton, 76–78.
Production, Labor and. Horace B. Drury, 79–88.
Production, Management and. Fred J. Miller, xiii–xv.
Production, Manager's Responsibility for. Charles de Freminville, 163–169.
Production, Organizing the Shop for. R. L. Cornick, 36–39.
Production and Profits. Henry S. Dennison, 159–162.
Production and the Preservation of Initiative. Helen Marot, 14–18.
Production, Will Greater, Cure Social and Industrial Unrest. Hugh Frayne, 56–63.
Production, Research and. Harrison E. Howe, 127–132.
Production, Selling to the Management. Harlow S. Person, 133–139.
Production, What Is? Thomas Warner Mitchell, 64–69.
Production, The Workers and. Samuel Gompers, x–xii.
Productive Industry, Women in. Lillian Erskine, 93–97.
Profit sharing, 112.
Profits, Production and. Henry S. Dennison, 159–162.
Prologue. Herman Schneider, v.
Publicity, in industry, 5.

Reed, Hudson W. Shop Control as a Manager Sees It, 146–152.
Research: defined, 127; in the humanities, 131; in illumination, 127; labor's interest in, 132;s hortens processes, 128; wastes utilized, 129.
Research and Production. Harrison E. Howe, 127–132.

Schneider, Herman. Prologue, v.
Science, Labor and. Edward Herriot, 50–55.
Scientific Management: methods of, 37; plus scientific evocation, 30.
Selling Production to the Management. Harlow S. Person, 133–139.
Shelton, Henry Wood. Every Worker an Engineer, 1–6.
Shop, Organizing the, for Production. R. L. Cornick, 36–39.
Shop control: absentee control, 162; committees, 9–10; discipline, 149; help, selection of, 147; temporary, 148; production, meaning of, 146; setting of standards, 150; transferring of workers, 148; quality of workmanship, 151.
Shop Control as a Manager Sees It. Hudson W. Reed, 146–152.
Smith, Adam, 52, 55.
Social insurance, 117.
Social unrest, 56.
Strikes: Kansas law, 22; responsibility of labor and capital for, 85.

Taylor, F. W., 55, 159, 160, 163–166.
Thompson, W. Gilman, 103.
Time study, and work analysis, 164.
Todd, Arthur J. Reaching the Mainsprings of the Wills of People, 26–35.
Trade Union: health records, 11; changing policy of, 16; theory of, 73; for progress, 141; production and, 144.
Trotsky, 54.

Vail, Theodore N., 159.
Valentine, Robert G., ix, 142.

Wage: what is living, 110; high, incentive to production, 11; low, cause of increased sickness, 115.
Walker, John H., Coöperative Production, 89–92.

Wallace, Graham, 33.
Ward, Lester F., 34.
Watts, 76.
Weitling, Wilhelm, 54.
Welfare work, and production, 35.
Weydemeyer, Joseph, 54.
Wills of People, Reaching the Mainsprings of. Arthur J. Todd, 26–35.
Wolf, Robert B., 34.
Woll, Matthew. Industrial Relations and Production, 7–13.
Women in Productive Industry. Lillian Erskine, 93–97.
Workers, Some Expectations of the. James M. Lynch, 108–120.
Workers, The, and Production. Samuel Gompers, x–xii.
Working conditions, economic value of good, 95.